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# Highlights, Facts & Figures

A wide-angle photograph of the Golden Gate Bridge in San Francisco. The bridge's red-orange towers and suspension cables are silhouetted against a twilight sky filled with soft, glowing clouds. The city lights of San Francisco are visible in the distance across the water.

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OLDEN GATE BRIDGE, HIGHWAY  
AND TRANSPORTATION DISTRICT

SIXTH EDITION • JULY 2009

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# HIGHLIGHTS, FACTS & FIGURES

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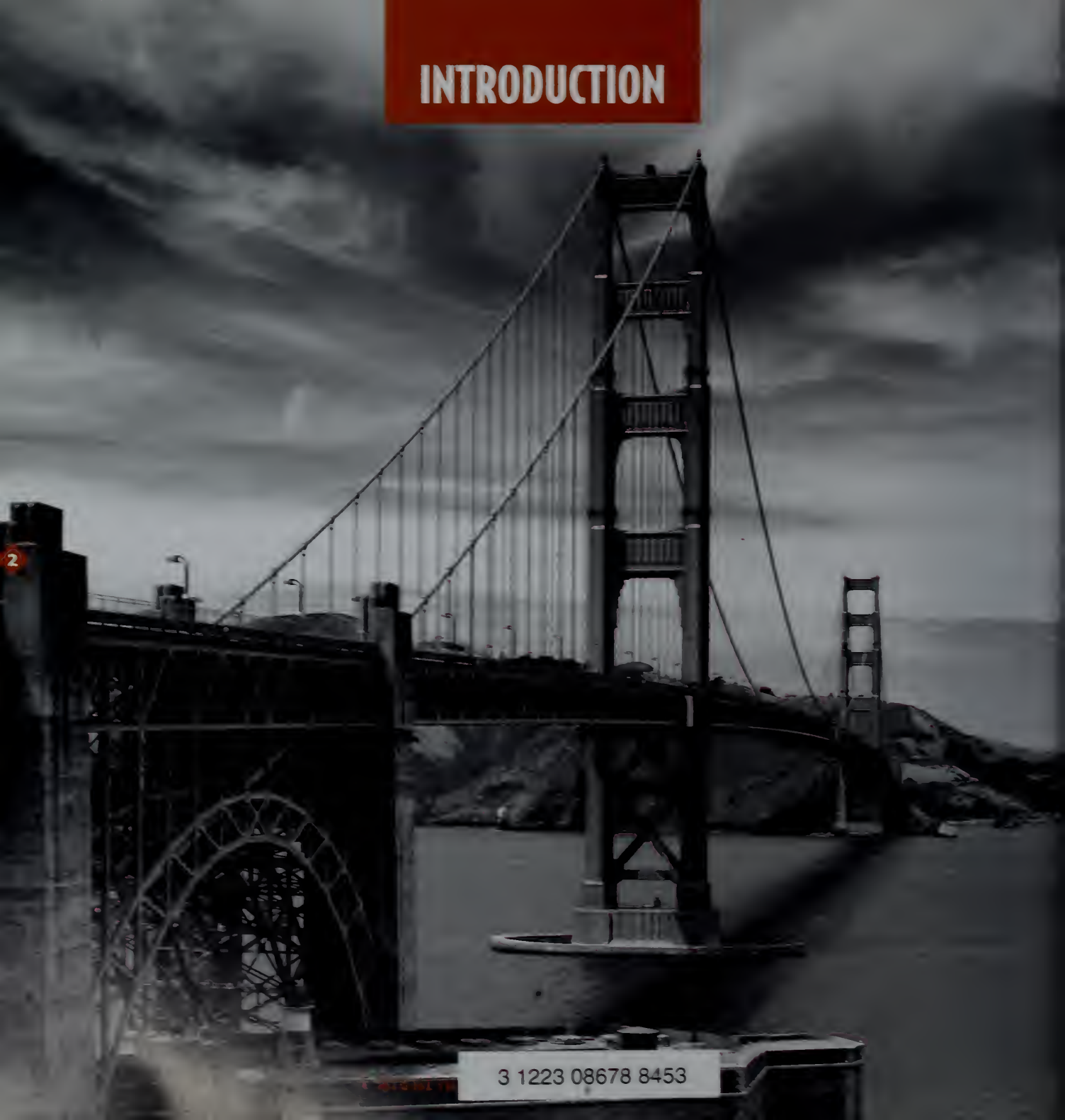
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## OF THE GOLDEN GATE BRIDGE, HIGHWAY AND TRANSPORTATION DISTRICT

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# INTRODUCTION



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Welcome to the sixth edition of *Highlights, Facts and Figures*. This booklet provides a historical overview of the building of the Golden Gate Bridge, along with the development of the Golden Gate Transit and Golden Gate Ferry systems. Please visit [www.goldengate.org](http://www.goldengate.org) to learn more about the Golden Gate Bridge, Highway and Transportation District (District).

The Golden Gate Bridge stands at the entrance to San Francisco Bay in California as a symbol of American ingenuity and resolve, having been constructed during the era of the Great Depression. The Golden Gate Bridge has become a beloved international icon and an engineering marvel. It is a vital transportation link within the San Francisco Bay Area, serving 40 million vehicles a year, along with millions of tourists from around the world.

In December 1928, the California Legislature formed a special district, the Golden Gate Bridge and Highway District, whose

express purpose was to construct, operate and maintain a bridge across the Golden Gate Strait, linking San Francisco with the counties to the north. In November 1930, voters in the member counties approved a \$35 million bond issue required to finance the building of the bridge, with repayment to be entirely from toll revenues.

Construction began January 5, 1933, and the Golden Gate Bridge opened to vehicular traffic on May 28, 1937. Annual traffic across the span grew steadily from 3.3 million during the first full year of operation, to 16 million by 1957. By 1965, annual crossing exceeded 25 million and traffic congestion on the Bridge had grown close to unmanageable levels. In response to the traffic congestion explosion around the San Francisco Bay Area, numerous transportation studies ensued. Concepts ranged from building new bridges, to the creation of a rapid transit system, to the construction of a tube beneath the Bay, to the addition of a lower deck on the Golden Gate Bridge.



Concurrently, the District explored other options to reduce and manage traffic congestion on the span. Two new and very innovative traffic management programs were developed and implemented that greatly aided the flow of traffic: reversible lanes in 1963 and one-way toll collection in 1968.

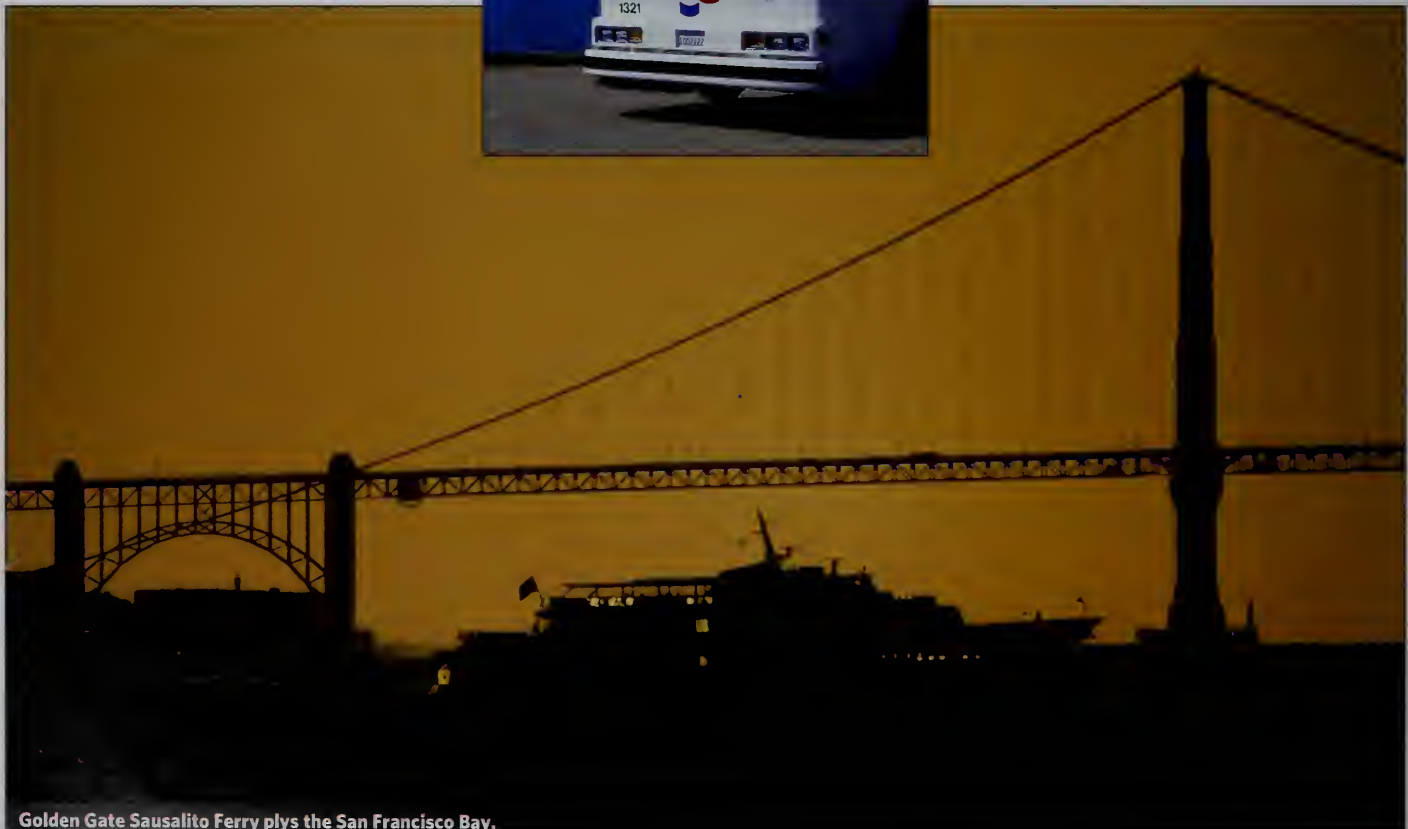
While these measures improved the flow of traffic, congestion on the Golden Gate Bridge continued to grow, and on November 24, 1967, the District Board of Directors (Board) authorized a study of mass transit options as a means of relieving congestion. Working with regional planning partners, extensive studies were conducted and resulted in a regional decision to expand the role of the District in

providing transportation connections between San Francisco and the counties to the north.

On November 10, 1969, the District's enabling legislation was modified to include the operation of a multi-modal mass transit system, and the District's name was changed to "Golden Gate Bridge, Highway and Transportation District." In 1970, Golden Gate Ferry service began, followed by Golden Gate Transit bus

service in 1972. Since the addition of the transit systems, the District has four divisions: Golden Gate Bridge, Golden Gate Transit and Golden Gate Ferry, and an administrative division.

Today, the District's mission is to provide safe and reliable operation, mainte-



Golden Gate Sausalito Ferry plies the San Francisco Bay.

nance and enhancement of the Golden Gate Bridge and to provide public transportation services, as resources allow, for customers within the U.S. Highway 101/Golden Gate Corridor.

Through management of over 800 employees who work together in the public interest, the General Manager leads the operations of the District in accordance with policy and direction provided by the Board. The Board consists of 19 members representing the District's six member counties: San Francisco, Marin, Sonoma, Del Norte and parts of Mendocino and Napa counties.

The District is unique among Bay Area transportation operations because it provides its public transit services without support from local sales tax measures or dedicated general funds. As the District does not have the authority to levy taxes, the use of surplus Bridge toll revenue is the only available local means the District has to assist in funding its bus and ferry services. Golden Gate Bridge users garner a direct benefit of the use of surplus toll revenue to support transit operations through a significant reduction in traffic levels, especially during commute hours. Today, during the peak-hour of the morning commute, about 30 percent of all trips into San Francisco are carried by the District's buses and ferries, removing 13,000 automobiles from San Francisco's streets.



Artist Chesley Bonestell prepared illustrations of various Bridge design elements prior to construction.



**T**he Golden Gate Bridge (Bridge) can be a very, very busy place, particularly during the summer months. It is estimated that at least ten million people visit each year.

## WEATHER

San Francisco has a Mediterranean climate which is generally mild year-round. May to October is typically the dry season and is mild to warm, with average high temperatures of 64°F to 70°F and lows of 51°F to 56°F. November to April is generally the rainy season and is cool with high temperatures of 56°F to 64°F and lows of 46°F to 51°F. The combination of cold ocean water and the high heat of the California mainland creates the areas famous fog that can cover the Bridge, at times, all day during the spring and summer, or can burn off by midday. The weather can be unpredictable on any day of the year with gusting cold winds, rain and/or fog. Visitors are encouraged to wear layered clothing. Check the current weather conditions on the real-time webcam at [www.goldengate.org](http://www.goldengate.org).

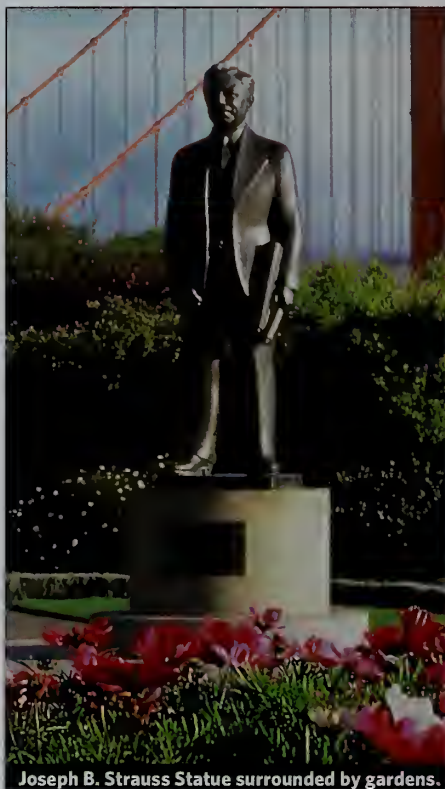
## SOUTHSIDE VISITOR AREA

There are several great viewing areas located in close proximity to the Bridge.

**San Francisco Southside Visitor Area** is located on the southeast side of the Bridge. Metered parking (73 spaces plus several charter bus parking stalls) is available including accessible parking spaces. This area houses the Bridge Café, Gift Center, interpretive information and public restrooms.

To access the Southside Visitor Area: Traveling north, take the last San Francisco northbound exit off Highway 101, just

# TIPS FOR VISITORS



Joseph B. Strauss Statue surrounded by gardens.

before the toll plaza. Turn left into the parking lot. Traveling south, use the far right toll lane and take an immediate right, exiting Highway 101 at Merchant Road/25th Avenue. Make another very immediate right, travel down a very short hill, bare right into a short tunnel that passes underneath the toll plaza and directly into the Southside Visitor Area parking lot.

## Roundhouse Gift Center

Visitors should not leave without a visit to the Roundhouse Gift Center which offers a variety of Bridge souvenirs and historical information. Open seven days a week (except Christmas and New Year's), from 8:30 am to 7:30 pm during summer months and 8:30 am to 6:30 pm during the winter months (hours subject to change, call 415-923-2331). Bridge souvenirs are also available through the online store at [www.goldengate.org](http://www.goldengate.org)

Designed in 1938, the Roundhouse was originally a restaurant for passing motorists. In 1973, it was converted to offices and then, in 1987, it was transformed into the Gift Center.

## Bridge Café

In addition to visiting the Roundhouse Gift Center, visitors may enjoy snacks and beverages available at the Bridge Café, adjacent to the Strauss Statue.

## Joseph B. Strauss Statue

Joseph B. Strauss, Chief Engineer of the Golden Gate Bridge, is honored in statue form as a constant reminder of the determination of the many dedicated workers that it took to build this engineering marvel. The Strauss Statue also represents the con-



tinued recognition of the man who refused to give up on his vision of bridging the Golden Gate Strait.

**Main Cable Cross-Section**

Adjacent to the Strauss Statue is a cross-section of the main cable of the Golden Gate Bridge. The cross-section demonstrates the complexity and magnitude of this incredible engineering feat. Various Bridge construction statistics are also displayed.

**Golden Gate Gardens**

Since the 1960s, the renovated garden areas have been the backdrop showcasing the historic Bridge to visitors from around the world. As visitors step back from the Strauss Statue, they are



The Roundhouse was converted from office space to a Gift Center in 1987.



The Roundhouse started out as a restaurant and was later converted to office space.

faced with yet another visual treat: the immaculate gardens. On less than five acres, the annual and perennial flower beds and manicured hedges accent the brick sidewalks, inviting guests to wander up or down a path to view the Bridge from different perspectives. The gardens have been acclaimed in Joan S. Hockaday's book *The Gardens of San Francisco* and in *Pacific Horticulture* magazine.

## VISTA POINT

Vista Point (H. Dan Bowers Safety Roadside Rest Area) is located on the northeast side of the Bridge in Marin County. When travelling north, take the first exit at the north end of the

Bridge to access this area. Vista Point is operated by the California Department of Transportation (Caltrans), houses the Lone Sailor Memorial and offers great views of the Bridge and San Francisco. Parking is free for up to 4 hours and there are accessible parking spaces as well as public restrooms.

## OTHER NEARBY VIEW AREAS

- Fort Point Historic Site is located on the southeast side of the Bridge, at the water's edge below the Bridge's Southside Visitor Area. Take Lincoln Blvd. to Long Ave, to Marine Drive.
- Golden Gate National Recreation Area, Marin Headlands is located on the northwest side of the Bridge. Access via Conzelman Rd.
- Golden Gate National Recreation Area, Fort Baker is located on the northeast side of the Bridge. Access via Alexander Ave. to Bunker Rd. or East Rd.
- The Presidio of San Francisco is located on the south side of the Bridge and offers exceptional views from Battery Cranston to Baker Beach.

To learn more about these sites, visit [www.nps.gov](http://www.nps.gov)

## BRIDGE SIDEWALK ACCESS

Pedestrians may access the east sidewalk (which faces east towards San Francisco) seven days a week. Access hours fluctuate seasonally and are generally sunrise to sunset. No roller blades, skateboards or roller skates are allowed. The east sidewalk may be accessed from either the Southside Visitor's Area or Vista Point.

Bicyclists may access the sidewalks 24 hours a day. On weekdays, bicyclists and pedestrian share the east sidewalk from sunrise to 3:30 pm. On weekends, bicyclists are allowed access to the west sidewalk. Pedestrians are not allowed on the west sidewalk. Bicyclists must yield to pedestrians and use caution in the areas of the main towers as there is limited space to maneuver and sight distances are constrained.

Visit [www.goldengatebridge.org/bikesbridge/bikes.php](http://www.goldengatebridge.org/bikesbridge/bikes.php) for more information on sidewalk access.

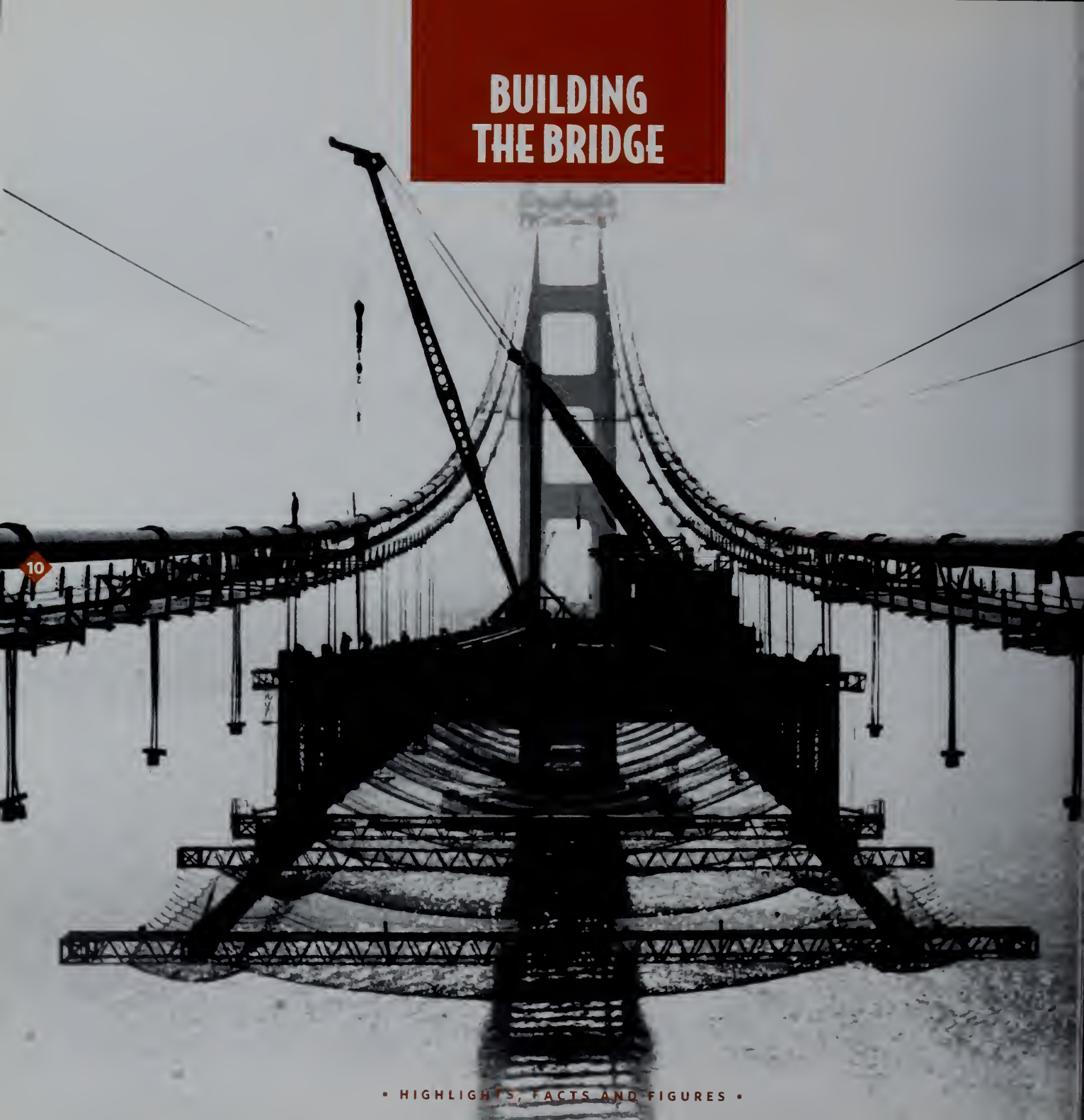


The Golden Gate Bridge is surrounded by National Park lands.





# BUILDING THE BRIDGE

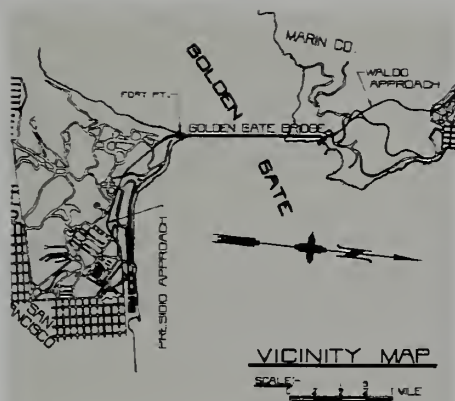


• HIGHLIGHTS, FACTS AND FIGURES •



## THE CONCEPT

In 1916, more than four decades after railroad entrepreneur Charles Crocker's call for a bridge across the Golden Gate Strait (Strait) in 1872, James H. Wilkins, a structural engineer and newspaper editor for the *San Francisco Call Bulletin*, captured the attention of San Francisco City Engineer Michael M. O'Shaughnessy who began to consult a number of engineers about feasibility and cost of building a bridge across the strait. Most speculated that a bridge would cost over \$100 million and could not be built. It was Joseph Baermann Strauss who came forward and said such a bridge was not only feasible, but could be built for \$25 to \$30 million.



On June 28, 1921, Strauss submitted his preliminary sketches to O'Shaughnessy and Edward Rainey, Secretary to the Mayor of San Francisco, the Honorable James Rolph. The cost estimate for his original design, a symmetrical cantilever-suspension hybrid span (pictured on page 13), was \$17 million.

It took O'Shaughnessy a year and one-half to release the cantilever-suspension hybrid bridge design to the public. During this time, Strauss went about promoting the idea of a bridge, using his original design, in communities throughout northern California. Strauss dedicated himself to convincing civic leaders that the span was not only feasible but it could be paid with toll revenues alone. His energies



Left: A safety net, the first used in bridge building, was suspended below the span. Above: Construction of Bridge towers as seen from San Francisco.



Joseph Baermann Strauss

paid off, as once his design was made public by O'Shaughnessy in December 1922, the public voiced little opposition, even though it was described as "ugly" by the local press.

Strauss was the steadfast believer who organized the political, financial and promotional efforts to build the Bridge. The time was right to span the Strait as population centers were growing and traffic congestion at the ferry docks was becoming intolerable. By 1929, motor vehicle travel via ferry had exploded, with demand exceeding available capacity. But there were no federal or state funds available to build a bridge because the construction of the San Francisco-Oakland Bay Bridge had already received the limited federal funds available.

### **SPECIAL DISTRICT FORMED**

The idea of forming a special district of the State of California to construct the bridge was proposed by O'Shaughnessy, Rainey, and Strauss. They believed a special district was necessary to oversee the financing, design and construction of the Bridge so that all counties affected would have a voice in the proceedings.

On January 13, 1923, an historic meeting was called by Franklin P. Doyle, a local Sonoma County banker and president of the Santa Rosa Chamber of Commerce. Out of this meeting, the Bridging the Golden Gate Association was formed and devoted its efforts to the promotion of a span across the Strait. The Association was dedicated to promoting the idea, through its "Bridge-the-Gate" campaign, throughout the northern California counties. The Association was also committed to obtaining legislation for carrying out the project.

Working with California State Assemblyman Frank L. Coombs of Napa and Marin County attorney George H. Harlan, a specialist in the organization of tax districts, the Coombs Bill, enabling the creation of a special district—Bridge and Highway District—for the purpose of planning, designing, building and financing a bridge across the Strait, was signed into law on May 25, 1923.

The fate of the bridge idea was now in the hands of the War

Department as only it could authorize construction as the owner of the land on either side of the Strait. Additionally, the War Department had jurisdiction over all harbor construction potentially affecting shipping traffic or military logistics. In May 1924, San Francisco and Marin counties made a joint application to the War Department for a permit to build a bridge. The War Department held a hearing on May 16, 1924, to discuss two issues: would the bridge hinder navigation and was adequate financing available. Because of overwhelming testimony in favor of the bridge project, Secretary of War John W. Weeks issued a provisional permit on December 20, 1924.

Strong opposition emerged from well-financed special interests, particularly ferry companies. An aggressive campaign was launched to stop construction of a bridge and the formation of the special district.

Under the Coombs Bill, all 21 northern California counties had the option to join or not join the Bridge and Highway District. When 10 percent of a county's population agreed, by signing a petition, the petition was then submitted to the county board of supervisors who would then decide to join or not join the District. While many counties opted out, San Francisco, Marin, Sonoma, Del Norte and parts of Napa and Mendocino counties ultimately voted to form the Bridge and Highway District.

Subsequently, a vigorous campaign was launched against the formation of the District, and for nearly six years the formation of the District was dragged through the courts of the counties involved. Bridge supporters prevailed, and on December 4, 1928,

The Golden Gate Strait is the entrance to the San Francisco Bay from the Pacific Ocean. The strait is approximately three-miles long by one-mile wide with currents ranging from 4.5 to 7.5 knots. It is generally accepted that the Strait was named "Chrysopylae" or Golden Gate by John C. Frémont, Captain, Topographical Engineers of the U.S. Army circa 1846. It reminded him of the harbor Byzantium in Istanbul named Chrysoceras or Golden Horn.

the Golden Gate Bridge and Highway District (District), comprised of its six member counties, was incorporated by the California State Legislature as the sole entity responsible for the final design, construction, and financing of a bridge.

Following the formal creation of the District, the Boards of Supervisors of the District's six member counties appointed directors to the District's Board of Directors (Board). The first meeting of the Board was held on January 23, 1929. William P. Filmer was the first Board Pres-



**Original symmetrical cantilever-suspension hybrid bridge design.**

ident, with Alan MacDonald appointed as General Manager, John R. Ruckstell as Auditor, and William W. Felt, Jr. as Secretary, George H. Harlan as Attorney, and Joseph B. Strauss as Chief Engineer.

## **BRIDGE DESIGN**

In 1921, Strauss hired Charles A. Ellis to head up his staff and soon advanced him to Vice President, Strauss Engineering Corporation, in charge of bridge design and construction supervision. In 1925, he had Ellis arrange for Prof. George F. Swain of Harvard University and designer of New York's Manhattan Bridge Leon S. Moisseiff to serve on a Board of Consultants for the project.



Both men reviewed Strauss's original plans for a symmetrical cantilever-suspension hybrid bridge and found them to be practical from an engineering standpoint and capable of being built. In November 1925, Moisseiff expressed concern about the hybrid design and submitted to Strauss his *Report on Comparative Design of a Stiffened Suspension Bridge over the Golden Gate Strait at San Francisco, Cal.* which describes a design contrasting from the cantilever-suspension hybrid bridge design—a suspension span design.

The suspension span concept did not immediately become the leading design for the bridge as Strauss continued to campaign for a bridge using his original symmetrical cantilever-suspension hybrid design as late as 1929.

On August 15, 1929, the Board appointed prominent engi-

neers Moisseiff, O.H. Ammann, and University of California, Engineering School, Berkeley, CA, Professor Charles Derleth, Jr., to serve as the Advisory Board of Engineers, alongside Chief Engineer Strauss. Strauss also appointed Ellis to work with the Advisory Board of Engineers, serving as its Secretary.

The timing of the change from the original Strauss proposal to a suspension bridge design is not precisely known, but it was accomplished sometime between the release of Moisseiff's November 1925 report and the first meeting of the Advisory Board of Engineers on August 27, 1929. Further, *The Golden Gate Bridge, Report of the Chief Engineer, September 1937*, by Strauss, provides no details on the transition from his originally proposed symmetrical cantilever-suspension hybrid bridge to the Moisseiff-inspired suspension span design that was eventually built,



San Francisco and Marin towers under construction.



Workers sculpt the 61 cable strands of the main cable with a hydraulic compacting machine.



and simply states, "... In the interval which had elapsed any advantages possessed by the cantilever-suspension type bridge had practically disappeared and on recommendation of the Chief Engineer, the cantilever-suspension type was abandoned in favor of the simple suspension type."

On March 1, 1930, with final design underway and after overseeing test borings at the construction site, Ellis returned to Chicago to work on refining the design and estimates, while continuing to consult with Advisory Board of Engineers members Moisseiff and Ammann.

Ellis was responsible for directing the thousands of calculations required, for the computation of stresses, the preparation of stress sheets, as well as the development of the specifications, contracts and proposal forms. He worked tirelessly until Decem-

ber 5, 1931, when Strauss insisted he take a vacation. Three days before his vacation was over, Ellis received a letter from Strauss instructing him to turn all his work over to his assistant Clarahan, and to take an indefinite unpaid vacation.

For reasons still not clear today, Strauss had fired Ellis. Ellis had lost his place in the history receiving no credit for his critical role in the design of the landmark Bridge. He went on to join the engineering faculty at Purdue University in 1934, from where he retired as Professor Emeritus of the Division of Structural Engineering in 1947. He passed away on August 29, 1949.



Cable bands were added to the main cable to support the vertical suspender ropes.



Cable formers with separators kept the 61 main cable strands in vertical rows as they were spun

## BRIDGE CONSTRUCTION

Eleven of the nation's leading bridge engineering firms submitted construction proposals. On August 11, 1930, the War Department issued its final permit for the construction of a 4,200-foot main span with a vertical clearance of 220 feet at mid-span. On August 27, 1930, Strauss submitted final plans to the Board.

On November 4, 1930, voters within the District's six member counties went to the polls on the question of whether to put up their homes, their farms and their business properties as collateral for a \$35 million bond issue to finance bridge construction. For some, the timing of the bond election was considered economically reckless as it would create bonded indebtedness



Workers prepare the top of the tower for the spinning of the main cables.



Workers spot-weld the reinforced iron for the roadway concrete.

16

during the Great Depression. Others said bridge construction represented the economic relief needed from the Great Depression. After the vote, it was clear the people believed in Strauss' vision—145,057 voted in favor and 46,954 against it.

### CONSTRUCTION CONTRACTS

In November 1932, contracts totaling nearly \$24 million were awarded:

McCLINTIC-MARSHALL CORPORATION: \$10,494,000 for supplying the steel for and building the super structure

JOHN A. ROEBLING'S SONS COMPANY: \$5,855,000 for the main two cables and vertical suspension cables

PACIFIC BRIDGE COMPANY: \$2,935,000 for construction the main tower piers and San Francisco tower fender

BARRETT & HILP: \$1,859,855 for construction of the two anchorages and the piers of approach spans

BARRETT & HILP AND PACIFIC BRIDGE COMPANY: \$555,000 for paving

J.H. POMEROY & COMPANY, INC. AND RAYMOND CONCRETE PILE

COMPANY: \$934,800 for construction of the San Francisco and Marin approaches

EATON & SMITH: \$996,000 for construction of the San Francisco Presidio Approach Road (known as Doyle Drive today)

ALTA ELECTRIC & MECHANICAL COMPANY: \$154,470 for electrical work

SAUSALITO APPROACH ROAD: This contract was not awarded. Instead, beginning in April 1936, this was built as a federal Work Projects Administration (WPA) project.

Steel for the span came via the Panama Canal from the Bethlehem Steel Corporation plants in the eastern United States and concrete was poured on site.

### GROUND BREAKING CELEBRATION

Construction began on January 5,

Respirator masks were worn to avoid fumes from smoking rivets.



1933, with the official ground breaking ceremony held on February 26, 1933, at nearby Crissy Field (now part of the Golden Gate National Recreation Area). A festive parade through the Marina District began at 12:45 pm. Navy planes flew in formation and engineering students carried an 80-foot-long replica of the Bridge. Speeches were made by Governor James Rolph, San Francisco Mayor Angelo Rossi, and Board President William P. Filmer along with the reading of a congratulatory telegram from President Herbert Hoover. At 4 pm, Major General Craig gave the right-of-way grants to Filmer, and Rossi and Filmer then turned a golden spade.

### CONSTRUCTION COST

The total construction cost was \$35 million which included

\$27 million for construction of the structure; \$2 million for engineering and inspection, nearly \$500,000 for administrative and preliminary expenses; \$4 million for financing costs, and the remainder as contingency.

The final \$27 million for construction of the structure is higher than the \$24 million in initial construction bids as other items were included in the final total cost such as the toll plaza (\$450,000), toll collection equipment (\$72,000), tower elevators (\$60,000), miscellaneous equipment (\$45,000), and military replacements and improvements (\$575,000).

The last of the construction bonds was retired in 1971, with \$35 million in principal and nearly \$39 million in interest being paid entirely from Bridge tolls. There was no state or federal



Roadway being assembled in sections from both the San Francisco and Marin sides and attached to the vertical suspender ropes.



Pacific Coast Associates Co. provided concrete for the anchorages and the tower piers from on site concrete batching plants.





**\$130,00 safety net greatly aided the speed of construction.**

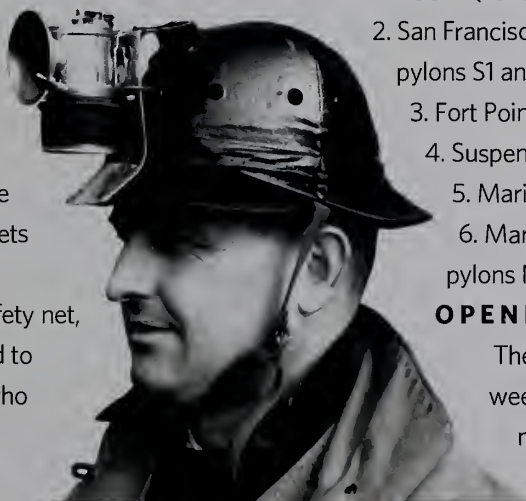
funds involved in building the Bridge with the exception of the Sausalito Lateral approach road (Alexander Avenue today) which was built as a federal WPA project.

### **SAFETY FIRST**

During construction, Strauss insisted on the use of the most rigorous safety precautions in the history of bridge building. The industry norm at that time was that one man would die during construction for every million dollars spent.

Edward W. Bullard, a local manufacturer of safety equipment, modified the mining helmet he had developed into an industrial hard hat that Strauss insisted be worn on the job. Bullard also designed a simple sand-blast respirator helmet for use during construction. Safety measures also included glare-free goggles, special hand and face cream to protect against the wind, and special diets to help fight dizziness.

The most conspicuous precaution was the safety net, suspended under the floor of the Bridge from end to end. While the net did save the lives of 19 men who became known as the "Half-Way-to-Hell Club", eleven men did die during construction. The first fatality was Kermit Moore on October 21, 1936.



**Hard hat with light used during construction.**



**Divers did all of the underwater work for the San Francisco tower pier.**

Then, on February 17, sadly ten men—O.A. Anderson, Chris Anderson, William Bass, Orrill Desper, Fred Dümmtzen, Terence Hallinan, Eldridge Hillen, Charles Lindros, Jack Norman, and Louis Russell—lost their lives when a section of scaffold fell through the safety net. The men are honored on a plaque located at the south side entrance to the west sidewalk.

### **BRIDGE STRUCTURES**

Spanning 1.7 miles, the Golden Gate Bridge consists of six main structures:

1. San Francisco (south) approach viaduct
2. San Francisco (south) anchorage housing and pylons S1 and S2
3. Fort Point arch
4. Suspension bridge
5. Marin (north) approach viaduct
6. Marin (north) anchorage housing and pylons N1 and N2

### **OPENING CELEBRATION**

The Golden Gate Bridge Fiesta was a weeklong celebration that included a nightly pageant at Crissy Field, fireworks, parades, and entertain-



The footwalk ropes spanned the Gate approximately three feet below the projected line of the main cables.



On April 28, 1937, buckeup Edward Murphy and riveter Ed Stanley attempted to drive a ceremonial gold rivet into the roadway steel, but it dissolved into flakes.



Fiesta Queens guarded the entrance at the toll plaza until Strauss formally presented the span to Board President Filmer.



International California Redwood Log-Barrier Sawing Contest.

ment. Schools were closed and businesses were either closed or reduced to minimum staff to join the festivities.

The Official Program of the Golden Gate Bridge Fiesta outlined the week-long schedule of events and included the toll rates, general rules and traffic rules for the new bridge. It also included a letter from San Francisco Mayor Angelo Rossi, photographs of the bridge engineers, and various facts about the span.

On May 27, 1937, the Fiesta began at 6 am with Pedestrians Day—the entire roadway was opened exclusively to pedestrians from dawn to dusk. By 6 am, thousands of people were waiting to cross. A number of “firsts” took place that day with people competing to be the first to run, roller skate, tap dance, ride a unicycle or cross on stilts. This proved to be a memorable event,

with news reports estimating up to as many as 200,000 pedestrians participated. At nearby Crissy Field, marching bands and floats that had traveled the flag-decorated parade route passed before a formal “Span of Gold” reviewing stand. Strauss arrived at about 10 am and simply shared his poem, “At last, the mighty task is done.” That night, the city celebrated the bridge with an enormous display of fireworks.

The Fiesta’s second day would be for automobiles. President Franklin Delano Roosevelt pressed a telegraph key in the White House declaring the span open to the entire world.

Here are a few of the special celebrations that took place on May 28, 1937:

**9:30 am:** Marin approach dedication ceremony sponsored by the Redwood Empire Association with speeches by Governor



Merriam, San Francisco Mayor Rossi and others.

**10:15 am:** International California Redwood Log-Barrier Sawing Contest.

**10:30 am:** Chain-cutting ceremony on Golden Gate Bridge at the Marin tower, the San Francisco-Marin County line. In attendance were San Francisco Mayor Rossi, Board President Filmer, and Board member and treasurer of Redwood Empire Association Frank P. Doyle.

**10:50 am:** Floral Gate Ceremony on toll plaza, with Fiesta Queens garlanded with flowers forming a living gate, which opened to official dignitaries following presentation of the completed Golden Gate Bridge to the Golden Gate Bridge and Highway District by chief engineer Strauss, and acceptance by Board President Filmer.

**11:00 am:** Flight over the Bridge by 500 planes from Navy aircraft carriers Ranger, Lexington and Saratoga and battleships 60 miles out at sea.

**12 Noon:** President Franklin Delano Roosevelt pressed a tele-



Joseph Strauss and Clifford Paine at the job site.

graph key in the White House declaring the span open to the entire world. Autos traveled over the Bridge simultaneously from the San Francisco and Marin sides.

**3 pm:** The arrival of the United States Fleet.

**10:00 pm:** A grand fireworks display.

## THE STRAUSS TEAM

We still celebrate today the collective efforts of the many engineers and other professionals who created the final design

of the iconic Bridge. The contribution of each, as individuals and as a team, led to the development of one of the premier suspension spans of our time. Strauss coordinated and managed the preliminary and final design, as well as the construction of the Bridge, working with a team of engineers, architects, geologists, other professionals, and the many dedicated contractors and workers involved in the project.

Most notably was the participation by the following individuals, all of whom, with the exception of Ellis, who served as Design Engineer under Strauss from 1922 to 1931, are named on a dedication plaque that remains mounted on the San Francisco tower of the Bridge to this day:

- Clifford E. Paine, Strauss Engineering Corporation Vice President, served as Principal Assistant Engineer during final design and construction
- Russell G. Cone was Resident Engineer during construction
- Charles Clarahan, Jr. and Dwight N. Wetherell served as Assistant Engineers
- O.H. Ammann, Prof. Charles Derleth, Jr., and Leon S. Moisseiff served on the Advisory Board of Engineers
- Sydney W. Taylor, Jr. was Consulting Traffic Engineer
- Irving F. Morrow, Morrow and Morrow Architects, was Consulting Architect



Bridge roadway construction completed.



- Andrew C. Lawson and Allan E. Sedgwick were Consulting Geologists

Although Ellis was never officially recognized by Strauss for his leadership efforts in the design of the Bridge, the record clearly demonstrates that he deserves significant credit for the suspension bridge design which we see and cherish today.

### **SUGGESTED READING**

This very brief history of the formation Bridge District and the building of the Golden Gate Bridge and is based primarily on historical information available in the following publications:

- The Golden Gate Bridge, Report of the Chief Engineer, Volume II*, by Stahl, Mohn, Currie, 2007 (purchase at [www.goldengate.org](http://www.goldengate.org))
- The Golden Gate Bridge, Report of the Chief Engineer 1937* by Joseph B. Strauss (not currently available for purchase)

*The Gate* by John van der Zee, 1986

*Spanning the Gate* by Stephen Cassady, 1979

*Golden Gate* by Allen Brown, 1965

### **SUGGESTED WEBSITES**

Golden Gate Bridge, Highway and Transportation District:

[www.goldengate.org](http://www.goldengate.org)

Online Archive of California: [www.oac.cdlib.org](http://www.oac.cdlib.org)

San Francisco Museum:

[www.sfmuseum.org/hist10/ggbridging.html](http://www.sfmuseum.org/hist10/ggbridging.html)

Bancroft Library at UC Berkeley: [bancroft.berkeley.edu](http://bancroft.berkeley.edu)

American Experience, Golden Gate Bridge:

[www.pbs.org/wgbh/amex/goldengate](http://www.pbs.org/wgbh/amex/goldengate)

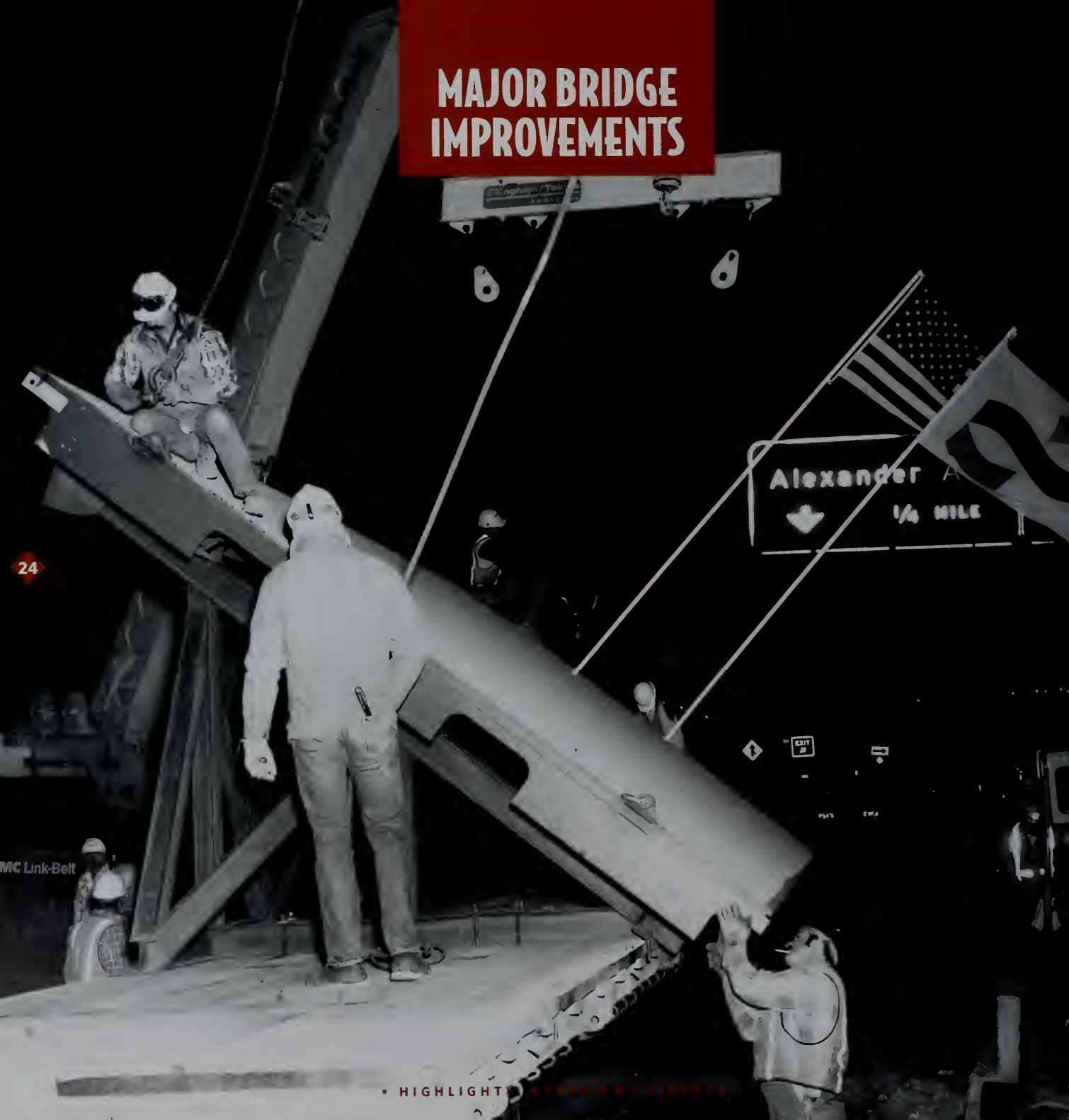
Archives of Irving and Gertrude Morrow:

[www.ced.berkeley.edu/cedarchives/profiles/morrow.htm](http://www.ced.berkeley.edu/cedarchives/profiles/morrow.htm)



Pedestrian Day, May 27, 1937.

# MAJOR BRIDGE IMPROVEMENTS



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MC Link-Belt



Since its completion in May 1937, a number of critical rehabilitation and improvement projects have been undertaken to preserve, protect and extend the life of the Bridge.

**1953 to 1954:** Lower lateral bracing system was added to the span to significantly increase the torsional stability of the stiffening truss of the roadway.

**1973 to 1976:** All vertical suspender cables were replaced due to advancing corrosion to the connection point at the roadway.

**1980 to 1982:** Approach structures were retrofitted to increase earthquake resistance.

**1980 to 1989:** Eleven toll collection booths were renovated and modernized.

**1982 to 1985:** Over 401 nights, the original concrete roadway deck was replaced with a lighter, stronger, orthotropic steel deck. The roadway was widened by two feet resulting in outside curb lane widths of 11 feet, up from 10 feet. The four inside lanes remained at 10 feet wide.

**1986 to 1987:** Decorative lighting of the main towers, designed by consulting architect Irving F. Morrow during the original design but not included in original construction, was installed.

**1993 to 1994:** West-side outside hand railing (approximately 6,557 lineal feet long) was replaced with an exact replica as corrosion constant exposure to the elements was taking its toll.

**1996 to 1997:** Pavement and drainage rehabilitation of the roadway in the toll plaza area was completed.

**1997 to 2008:** Phase 1 and Phase 2 of the Seismic Retrofit Design and Construction Project were completed. Phase 1 retrofitted the Marin approach structures from 1997 to 2002.



Public Safety Railing was added between the roadway and sidewalk.

From 2002 to 2008, Phase 2 retrofitted the San Francisco approach structures and Fort Point arch. In April 2008, Phase 3A began and will retrofit the north anchorage housing and pylons. The Phase 3B is anticipated to begin in 2010. Read more about this critical project on pages 27 to 31.

**2001 to 2003:** A 4 ft, 6 inch high railing was added between the Bridge roadway and each of the two sidewalks.



Phase 2 Seismic Retrofit Construction was completed in 2008.

Left: The final roadway section is lowered into place, April 15, 1985.



# EARTHQUAKE RETROFIT

## EARTHQUAKE RETROFIT

**A**t 5:04 p.m. on Tuesday, October 17, 1989, the 7.1 magnitude Loma Prieta Earthquake caused 68 deaths, at least 3,700 injuries and an estimated dollar loss of \$6 to \$7 billion. Although the Golden Gate Bridge suffered no damage, the earthquake became a catalyst for the 3-phased Seismic Retrofit Design and Construction Project.

With the U.S. Geological Survey predicting that there is a 62 percent probability of at least one magnitude 6.7 or greater trembler capable of causing widespread damage in the San Francisco Bay area within the next 30 years, the race against time to complete the retrofit of the span continues.

In 1990, the California State Governor's Board of Inquiry on the Loma Prieta Earthquake recommended all transportation structures of importance in California be seismically retrofit. Consulting seismic engineers had just completed a seismic evaluation of the Bridge and reported "It is vulnerable to damage in a Richter magnitude 7 or greater earthquake with an epicenter near the Bridge, and it could be closed for some time after such an earthquake." If a Richter magnitude 8.0 or greater earthquake centered near the Bridge were to occur, there would be a substantial risk of collapse of the San Francisco and Marin approach viaducts and the Fort Point arch, and extensive damage to the remaining Bridge structures, including the main suspension bridge.

In 1992, after determining that retrofitting the Bridge would be more cost-effective than replacing it, the District

worked with seismic engineering consultants to develop seismic retrofit design criteria that would retrofit the Bridge to a maximum credible earthquake of 8.3 Richter magnitude, which is equivalent to the 1906 San Francisco Earthquake

The construction effort was separated into phases in a manner that reflected the degree of structural vulnerability:

**Phase 1:** Marin (north) approach viaduct

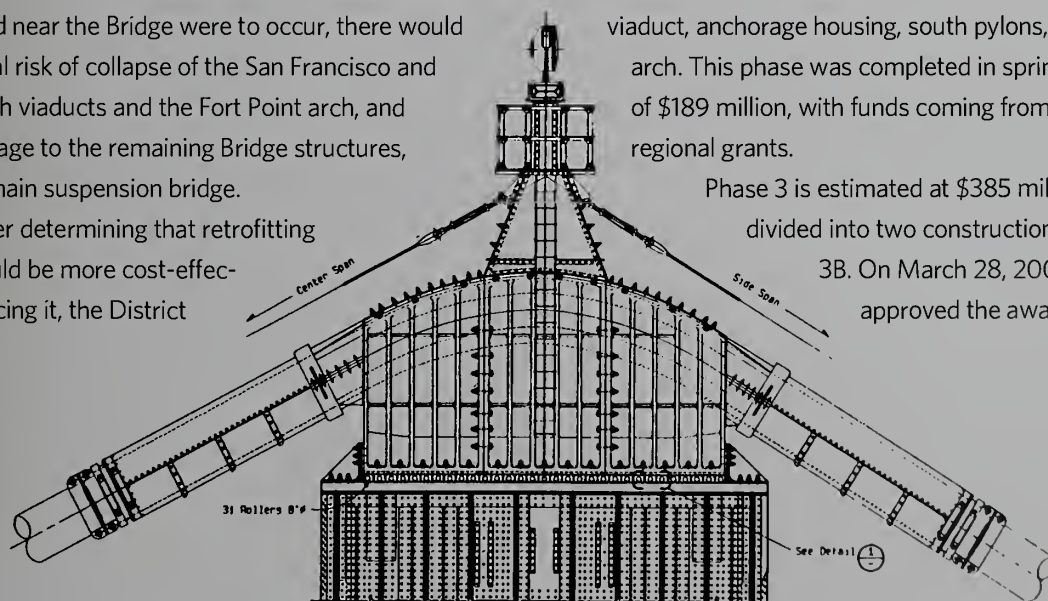
**Phase 2:** San Francisco (south) approach viaduct, San Francisco (south) anchorage housing, Fort Point arch, and pylons S1 and S2

**Phase 3:** Suspension bridge and Marin (north) anchorage housing.

The Seismic Retrofit Design and Construction Project is estimated at \$661 million (2009) which includes \$16 million for the preliminary studies. In August 1997, the \$71 million first phase began and was completed in December 2001. This phase retrofit the most vulnerable Marin approach viaduct. The first phase was funded with Bridge tolls which were increased from \$2 to \$3 in 1991 to assist in funding this lifeline project.

Phase 2 focused on retrofitting of the south approach viaduct, anchorage housing, south pylons, and the Fort Point arch. This phase was completed in spring 2008 at a cost of \$189 million, with funds coming from federal, state and regional grants.

Phase 3 is estimated at \$385 million (2009), and is divided into two construction phases—3A and 3B. On March 28, 2008, the Board approved the award of a contract for



the Phase 3A which will retrofit the Marin anchorage housing and north pylon. Phase 3A is estimated at \$125 million and is anticipated to be completed in 2011. Phase 3B is scheduled to go out for bid in 2010 and will include the retrofit of the 4,200 foot-long suspension span and the two 746 foot-tall main towers at an estimated cost of \$260 million.

It must be noted, by spring 2008, with the completion of Phase 1 and 2, the retrofit construction is now far enough along

that the Bridge no longer faces the potential for collapse in the event of a major seismic event. However, until the entire retrofit is completed, the risk of significant damage to the main suspension bridge remains. The completion of this landmark retrofit project will ensure the Bridge continues to serve as a safe and vital transportation link between San Francisco and the vast Redwood Empire to the north.



During Phase 2 Seismic Retrofit Construction, the west wall (in the foreground) of the San Francisco anchorage housing was entirely replaced.





Phase 2 Seismic Retrofit Construction included the San Francisco approach viaduct, anchorage housing, pylons and Fort Point arch.



Pylons S1 and S2 were reinforced with steel plates.



New concrete was added over the steel plates.

## SEISMIC RETROFIT MEASURES

### South Viaduct

Install isolators, replace towers and bracing members, add cover plates, strengthen foundation, replace expansion joints, close deck joints

### Pylon S2

Strengthen with steel plates, internally and externally, and anchor to bedrock

### Saddle

Strengthen and immobilize saddle/cable connection

### South Abutment

### Install Dampers

### Pylon S1

Strengthen with steel plates, internally and externally, and anchor to bedrock

**South Tower**  
746 ft. tall

### South Anchorage Housing

Strengthen by reinforcing internally, replace west wall and portions of east wall, strengthen foundation

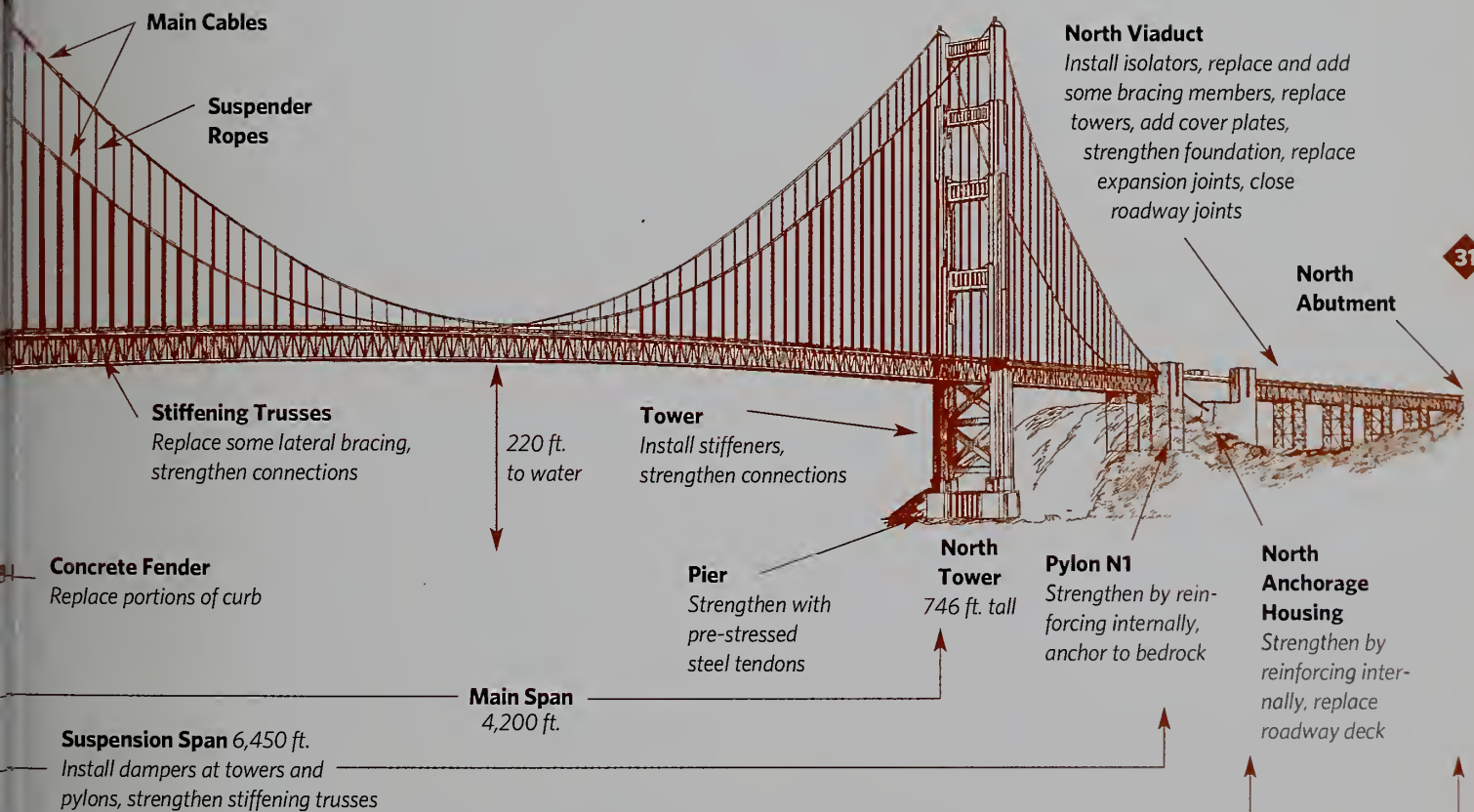
### Fort Point Arch

Install energy dissipation devices and expansion joints, add bracing, strengthen members and modify bearings

**Side Span 1,125 ft.**

Replace expansion joints

Phase 2 Seismic Retrofit  
Construction was completed  
in Spring 2008.



Phase 1 Seismic Retrofit Construction was completed in December 2001.



# BRIDGE STATISTICS

## THE BASICS

Total length of Bridge including approaches	1.7 miles	8,981 ft	2,737 m
Length of suspension span including main span and side spans	1.2 miles	6,450 ft	1,966 m
Length of suspension span excluding side spans		4,200 ft	1,280 m
Length of one side span		1,125 ft	343 m
Width of Bridge		90 ft	27 m
Width of roadway between curbs		62 ft*	19 m
Width of sidewalk		10 ft	3 m
Clearance above mean high water		220 ft	67 m
Deepest foundation below mean low water		110 ft	34 m
Live load capacity per lineal foot		4,000 lbs	1814.14 kg
Maximum transverse deflection at center span		27.7 ft	8.4 m
Maximum downward deflection at center span		10.8 ft	3.3 m
Maximum upward deflection at center span		5.8 ft	1.8 m

Total weight of each anchorage	60,000 tons	109,000,000 kg
Total weight of Bridge, anchorages, and approaches (1937)	894,500 tons	811,500,000 kg
Total weight of Bridge, anchorages and approaches (1986)**	887,000 tons	804,700,000 kg
Weight of Bridge <i>not</i> including anchorages and approaches (1986)**	419,800 tons	380,800,000 kg

## MAIN TOWERS

Height of towers above water	746 ft	227 m
Height of towers above roadway	500 ft	152 m
Base dimension (each leg)	33 ft x 54 ft	10 m x 16 m
Weight of the one tower	44,400 lbs	40,200,000 kg
Transverse deflection of towers	12.5 in	0.32 m
Longitudinal deflection of towers(shoreward)	22 in	0.56 m
Longitudinal deflection of towers (channelward)	18 in	0.46 m

MAIN CABLES

Diameter of cables including exterior wrapping	36 3/8 in	.92 m
Length of one cable	7,650 ft	2,332 m
Total length of wire used	80,000 mi	129,000 km
Number of wires on each cable	27,572	
Number of strands in each cable	61	
Weight of main cables, suspender cables & accessories	24,500 tons	22,200,000 kg

STRUCTURAL STEEL QUANTITIES

	tons	kg
Main towers	44,400	40,280,000
Suspended structure	24,000	21,772,000
Anchorage	4,400	3,991,000
Approaches	10,200	9,250,000

CONCRETE QUANTITIES (approx.)

	cubic yards	cubic meters
--	-------------	--------------

San Francisco Pier & Fender	130,000	99,400
Marin Pier	23,500	18,000
Anchorage, Pylons, and Cable Housing	182,000	139,160
Approaches	28,500	21,800

VEHICLE CROSSINGS

(Fiscal Year 2007/2008, ending June 30, 2008)

Annual vehicle crossings (north & southbound)	39.3 million
Total vehicle crossings (north & southbound) since opening (as of February 28, 2009)	1,844,359,265

TOLL REVENUE

(Fiscal Year 2007/2008, ending June 30, 2008)

Annual toll revenue	\$85.4 million
Total toll revenue since opening (as of February 28, 2009)	\$ 1,361,221,357 billion

\*The roadway width was 60 feet when the Bridge was constructed. The width was increased to 62 feet as part of the decking completed in 1986.

\*\*The total weight listed includes the reduction in weight due to the redecking in 1986. The weight of the original reinforced concrete deck and its supporting stringers was 166,397 tons (150,952,000 kg). The weight of the new orthotropic steel plate deck, its two inches of epoxy asphalt surfacing, and its supporting pedestals is 154,093 tons (139,790,700 kg). This is a total reduction in weight of the deck of 12,300 tons (11,158,400 kg), or 1.37 tons (1133 kg) per lineal foot of deck.

A low-angle, upward-looking photograph of the Golden Gate Bridge's iconic orange-red tower. The tower's massive steel structure, including its lattice-work and vertical supports, dominates the frame. Several thick suspension cables are visible, extending from the tower towards the bottom of the image. The background is a clear, deep blue sky. The overall composition emphasizes the scale and height of the bridge.

# BRIDGE SIGHTS AND SOUNDS

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• HIGHLIGHTS, FACTS AND FIGURES •



**A**claimed as one of the world's most beautiful bridges, there are many different elements to the Golden Gate Bridge (Bridge) which make it very unique. With its tremendous towers, sweeping cables and great span, the Bridge is a sensory beauty and engineering wonder featuring color, sound and light.

## ART DECO THEME

In vogue at the time the Bridge was under design was an architectural style of indenting structures as they ascend to emphasize the feeling of towering height. Other structures of the era such as New York City's Chrysler Building (1930) and Empire State Building (1931) had employed this styling. It was John Eberson, the first of the two consulting architects, that introduced this concept for the Bridge towers. After submitting an estimate that Strauss considered too high for the architectural treatments, Eberson was replaced with architect Irving F. Morrow.

Morrow added the consistent, yet subtle art deco elements which now embody the Bridge. He simplified the pedestrian railings to modest, uniform posts placed far enough apart to allow motorists an unobstructed view. The light posts took on a lean, angled form. Wide, vertical ribbing was added on the horizontal tower bracing to accent the sun's light on the structure. The rectangular tower portals themselves decrease on ascent, further emphasizing the tower height. These architectural enhancements define the Bridge's art deco form and it is this form which is known and admired the world over.

## LIGHTING THE BRIDGE

Morrow submitted his *Report on Color and Lighting* to Strauss on April 6, 1935. He indicated that the two most important factors in lighting the Bridge were the enormous size of the project and the tremendous scale and dignity of the project. Morrow carefully weighed these considerations as he designed his light-

ing scheme, one which would even further accent the uniqueness of the Bridge.

Because of the Bridge's great size, Morrow did not want the same intensity of light on all of its parts. The effect would seem too artificial. The towers, for example, were to have less light at the top so they would seem to soar beyond the range of illumination. Further, because of the scale and dignity of the Bridge, Morrow believed tricky, flashy or spectacular lighting would be unworthy of the structure's magnificence. Thus, he selected low-pressure sodium vapor lamps with a subtle amber glow for the roadway, providing warm, non-glare lighting for passing motorists. The lamps were the most modern available at the time.

In 1972, the original low-pressure sodium roadway lights were replaced with high-pressure sodium vapor lamps. These modern lamps provide improved lighting at a lower cost. To preserve the original warm glow, the new lampheads have a plastic amber lens. One of the original lamps is still burning at the Bridge behind the Roundhouse Gift Center just east of the toll plaza.



Left: The towers define the Bridge's art deco motif.



Original aircraft beacon atop Bridge tower.

The decorative lighting design envisioned by Morrow for the main towers was not implemented as part of the original construction due to budgetary constraints. It was not until June 22, 1987, shortly after the Bridge's 50th Anniversary, that the main towers came to life with new decorative lighting. Just as Morrow had envisioned, the decorative tower lighting enveloped the towers in a mellow glow at the base that made them seem to disappear into the evening darkness, further accenting their great height.

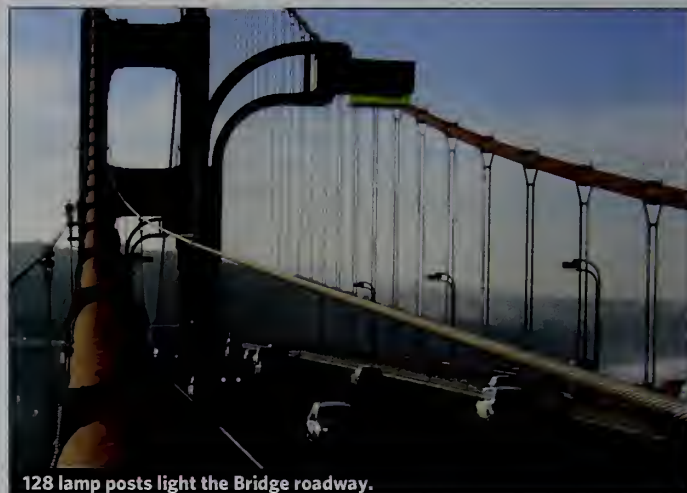
#### Bridge lighting includes:

**ROADWAY LIGHTS:** In 1982, the original low-pressure sodium 90 watt lights housed in the Bridge's 128 lamp posts were changed to the more efficient high-pressure sodium (HPS) 250 watt lights.

**SIDEWALK LIGHTS AT TOWERS:** 12 lights around each of the main towers are low-pressure sodium, 35 watts each.

**DECORATIVE LIGHTING AT TOWERS:** 12 lights above the roadway at each tower are HPS, 400 watts each. There are also 12 HPS lights below the roadway for each tower: four are 150 watts, four are 250 watts, and four are 400 watts.

**AIRCRAFT BEACONS:** Installed in 1980, each tower has a 360 degree flashing red aircraft beacon at the top and each beacon



128 lamp posts light the Bridge roadway.

houses two 750 watt lamps. Originally, there was a single red rotating aircraft beacon.

**TOWER PIERS:** South tower pier has red navigation lights, one 1000 watt navigation beacon faces north. There are four 116 watt lights on the tower fender. North tower pier has three 116 watt lights on the three sides facing the water.

**MAIN CABLE LIGHTS:** There are eight 116 watt lights on each cable that are red to "outline" the cables.

**MID SPAN:** For seafaring vessels, there are eight lights that mark the center of the Bridge below the deck at mid span; four on each side in a vertical column. The top three lights are white, the bottom light green.

#### INTERNATIONAL ORANGE

The Bridge has always been painted orange vermillion, deemed "International Orange." Rejecting carbon black and steel gray, Morrow ultimately selected the span's signature color as it blended so well with the span's natural setting. The steel fabricated for the Bridge arrived with a light coat of red lead primer which lead Morrow to the notion of International Orange. If the U.S. Navy had its way, the Bridge might have been painted black and yellow stripes to assure greater visibility for passing ships.

## PAINTING THE SPAN

Painting the Bridge protects the steel from the high salt content in the air which rusts and corrodes the steel components. When the Bridge was constructed, there were no specific requirements established for the application of the paint and typically a coat of red lead primer of unspecified thickness was applied over steel that had not received any type of surface preparation in the fabrication shop.

At the Bethlehem Steel Corporation fabrication plants and yards in Pottstown, PA, the steel for the main towers was coated with a light coat of red lead primer and the steel shipped via the



Suspender ropes receive their first coat of International Orange in 1937.

Panama Canal. A second coat of red lead primer, and an unspecified topcoat, was applied after the steel arrived at the job site. The engineers recognized that the specified coating system was not sufficient as corrosion had already begun to set in. As a result, the formulation of the red lead primer was changed and application procedures were specified, and the span was painted with a red lead primer and a lead-based topcoat.

Even with these changes, corrosion advanced on many of the structural steel components of the Bridge. When the Bridge was completed in 1937, it was clear that a comprehensive painting program was needed. But before a program could be implemented, World War II erupted, and attentions were diverted from this project until 1965. From 1965 to 1995, a program was undertaken to remove the original lead-based paint (68% red lead paste in a linseed oil carrier) and replace it with an inorganic zinc silicate primer and acrylic emulsion topcoat.

Many misconceptions exist about how often the Bridge is painted. Some say once every seven years, others say from end-to-end each year. The painting of the Bridge is actually an ongoing task and a primary maintenance job. Painting is based on inspections, upon which priorities for painting certain parts of the span are set.

## FOG HORNS

The original fog horns (one at mid-span and one at San Francisco tower pier) remained in use for almost 50 years. Their deep, baritone sounds guided hundreds of thousands of vessels safely through the Golden Gate Strait, and forewarned San Franciscans when fog was rolling in to envelop the City.

In the late 1970s, the Bridge's original two-tone fog horn at mid-span stopped working. One of the horn's two air valves gave way and the two-tone horn became a one-tone horn. Since the mechanism was so old, replacement parts were impossible to find. The hobbled horn continued to sound its one-tone until 1985.

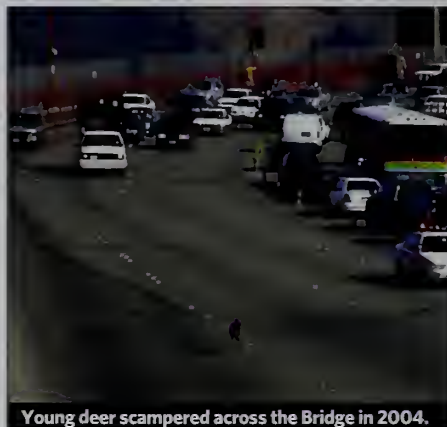
In 1985, both of the original fog horns were replaced by new



horns. The new single-tone horns differ in frequency and tone from each other, but operate with compressed air, just like the originals.

The fog horns operate, on average, two and a half hours a day. During the month of March, they can be heard less than half an hour a day. But during the Bay Area's fog season, July through October, they can sound over five hours a day.

Small vessels that do not have radar still use the Bridge fog horns as guides when visibility in the Golden Gate Strait is low. Each horn has a different pitch and marine navigational charts give the frequency, or signature, of each fog horn. Vessel operators heading into the San Francisco Bay steer left of the south pier horn and right of the mid-span horn. Out-bound vessels stay to the right of the mid-span horn.



Young deer scampered across the Bridge in 2004.

## SIGHTS TO BE SEEN

Over the years, many interesting and out of the ordinary things have occurred at the Bridge. A few of the most recent high-lights included several unusual animal sightings. The morning commute was just winding down on May 18, 2004, when at about 8:50 am, a young deer found its way onto the northend of the span where it had apparently come down from its natural world in the Golden Gate National Recre-

ation Area's Marin Headlands. As traffic came to a halt in both the directions, with the aid of a few patrol cars, the young deer scampered south across the entire length of the Bridge, darted through a FasTrak-only toll lane and disappeared into The Presidio grounds.

About 15 months later, on August 29, 2005, the Bridge had

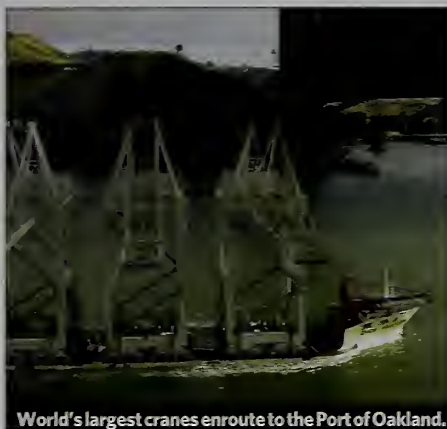
## WORLD'S LONGEST SUSPENSION BRIDGES

<i>Suspension Bridge</i>	<i>Main Span Length*</i>		<i>Completed</i>			
1. Akashi-Kaikyo, Japan	6,529 feet	1,991 meters	1998	9. Golden Gate, California	4,200 feet	1,280 meters 1937
2. Xihoumen, China	5,414 feet	1,650 meters	2007	10. Yangluo, China	4,200 feet	1,280 meters 2007
3. Great Belt, Denmark	5,328 feet	1,624 meters	1998	11. High Coast, Sweden	3,970 feet	1,210 meters 1997
4. Runyang, China	4,888 ft	1,490 meters	2005	12. Mackinac, Michigan	3,800 feet	1,158 meters 1957
5. Humber, United Kingdom	4,626 feet	1,410 meters	1981	13. Minami Bisan-Seto, Japan	3,609 feet	1,118 meters 1989
6. Jiangyin, China	4,543 feet	1,385 meters	1999	14. Huangpu, China	3,635 feet	1,108 meters 2008
7. Tsing Ma, Hong Kong	4,518 feet	1,377 meters	1997	15. Second Bosphorus, Turkey	3,576 feet	1,090 meters 1988
8. Verrazano Narrows, New York	4,260 feet	1,298 meters	1964	16. First Bosphorus, Turkey	3,524 feet	1,074 meters 1973
				17. George Washington, New York	3,500 feet	1,067 meters 1931

\*The main span is the main suspended span between the two main towers.

another unexpected visitor. A female ostrich escaped from a van and bounded onto the roadway at about 4:45 pm. She was retrieved safely and continued on to her Healdsburg farm.

On October 24, 2000, the first of three shipments of the world's biggest cranes bound for the Port of Oakland passed under the Bridge, with an estimated clearance 4 to 7 feet. The second shipment passed under the span with a clearance of



**World's largest cranes enroute to the Port of Oakland.**

about 7.9 feet on May 1, 2002. The final shipment cruised under the Bridge on March 5, 2005 with a clearance of 15 to 20 feet.

*Queen Mary 2* made maritime history on February 4, 2006, when she made her maiden call to San Francisco. The massive ship passed under the Bridge while thousands of maritime enthusiasts and well-wishers were on hand to welcome her.

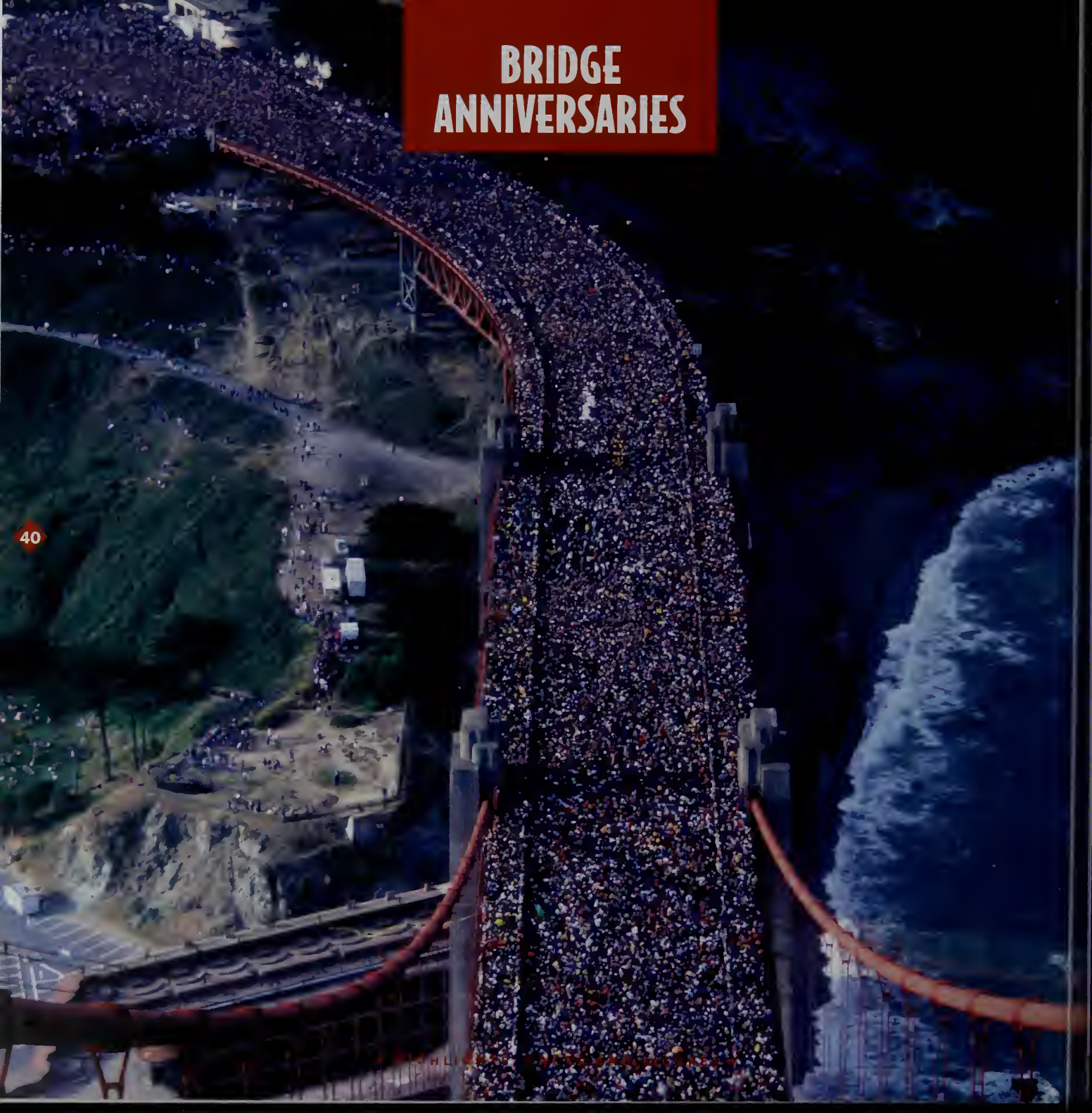


***Queen Mary 2* passed under the Golden Gate Bridge on February 4, 2006.**



# BRIDGE ANNIVERSARIES

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## 25TH ANNIVERSARY

The observance of the 25th Anniversary of the Golden Gate Bridge began with a civic luncheon at the St. Francis Hotel in San Francisco on May 25, 1962, sponsored in part by the Redwood Empire Association (REA) with more than 400 people attending, including present and past Board members, and many public officials of the counties of the District. Mr. Jack Craemer, President of the REA, opened the luncheon and Bridge District Director Dan E. London served as master of ceremonies. The keynote speech was delivered by Dr. Robert Gordon Sproul, President Emeritus of the University of California. Also, on May 27, there was an antique car parade across the Bridge.

The District's Fiscal Year 1961/1962 annual report noted, "The first quarter of a century of bridge operation was brought to a close with a highly successful conclusion, laying the groundwork for beginning the next step toward the Golden Anniversary of the Golden Gate Bridge, by which time the financial obligation of the District will have been fully discharged and the traffic saturation will have long since been reached."

## 50TH ANNIVERSARY

The dream of spanning the Golden Gate Strait had been around for well over a century before the Golden Gate Bridge opened to traffic on May 28, 1937. On Sunday, May 24, 1987, this "dream come true" was celebrated as the Bridge turned fifty. With great fanfare, people from all over the world came to pay homage to the Bridge, become part of a historical celebration and create lifelong memories.

The day began as "Bridgewalk '87" reenacted "Pedestrian Day '37" and an estimated 300,000 people surged onto the roadway. The Bridge roadway was closed to traffic at 5 am and

Left: 50th Anniversary celebration, May 24, 1987.



Pedestrian Day, May 27, 1937.

from 6 am to 10 am pedestrians were allowed onto the roadway.

While up to 200,000 people participated in the 12-hour Pedestrian Day '37, fewer people were expected to participate in the Bridgewalk '87 as it was held over a four-hour period. However, it is estimated that 300,000 people surged onto the span that morning, with another 400,000 to 500,000 gathered anywhere they could on all areas surrounding the span. Among the pedestrians making it onto the roadway were bicyclists, roller skaters, and even a small group in a centipede costume.

With the very large crowd gathered on the roadway that morning, the Bridge's profile shifted and its normal convex shape was flattened. Confirming calculations were subsequently performed by now retired District Engineer Daniel E. Mohn that reaffirmed the Bridge was not overstressed as a result of Bridgewalk '87.

At 8:00 am, a celebration that included San Francisco Mayor Dianne Feinstein and other noted public officials took place at mid-span on a large flatbed trailer. The celebration included the sawing of a Redwood log in two, signifying the bond between the Bridge and the REA. A wreath was to be cast onto the water to memorialize the 11 men who lost their lives during Bridge construction. But because of the crush of the crowd, the wreath was not at hand when Mayor Feinstein was ready to cast it into the sea. She quickly looked for a substitute and grabbed Speaker of the California State Assembly Willie Brown's \$800 Fedora and tossed it out to sea like a Frisbee.

By 10:00 am, the roadway was cleared for a commemorative vintage car parade and subsequently reopened to traffic.

As a token of appreciation to the thousands of motorists using the Bridge each day, the Board suspended toll collection for the day.

Afternoon and evening festivities continued on San Francisco's Marina Green and Crissy Field, scene of a star-studded evening concert. The celebration ended with a stunning fireworks display featuring a brilliant "waterfall" that showered from



**Bridge deflection during Bridgewalk '87.**



**50th Anniversary fireworks display.**

the Bridge to the Bay below—a fitting and spectacular finale to an unforgettable day.

Leading up to the events on May 24, the American Society of Civil Engineers (ASCE) sponsored Bridge Builders Day on May 20 to honor the engineers and workers who built the Bridge and on May 21, they sponsored "A Salute to Bridge Engineering" which was a symposium featuring prominent bridge engineers from around the world.

To enhance the visitor experience on the southeast side of the Bridge near the Roundhouse, two new gardens were developed as part of the 50th Anniversary—The Bank of Canton Commemorative Garden that included a granite wall (4,325



square feet), and the Friendship Garden (8,750 square feet). Also, a walkway comprised of personalized bricks was constructed at the southeast side of the Bridge in the visitor area. By March 1988, 7,416 bricks were installed and remain in place today.

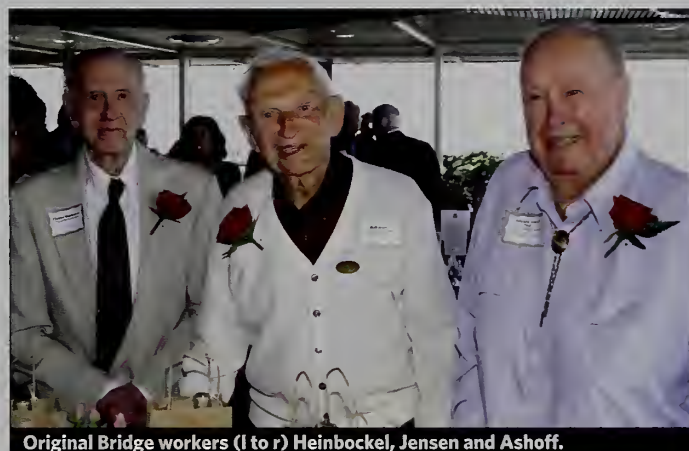
## 60TH ANNIVERSARY

May 27, 1997, marked the 60th Anniversary of the Golden Gate Bridge. The occasion was celebrated with a month long on-line celebration sponsored by Panasonic Interactive Media. The world was able to virtually explore the famed landmark via an interactive web site. The San Francisco Giants declared May 24, 1997, "Golden Gate Bridge Day" at Candlestick Park, making it a special day for fans of two San Francisco traditions: the Golden Gate Bridge and the San Francisco Giants.

The 60th Anniversary was also heralded on the Discovery Channel with the premiere of a new documentary, *The Golden Gate Bridge*. To mark the occasion in print, a new book *The Bridge: A Celebration* was released by James W. Schock.

## 70TH ANNIVERSARY

In honor of the 70th Anniversary, for *The Golden Gate Bridge, Report of The Chief Engineer, Volume II*, May 2007, was released. The book, by Retired Chief Engineer from Ammann & Whitney Frank L. Stahl, Retired Bridge District Engineer Daniel E. Mohn, P.E., and District Public Affairs Director Mary C. Currie, debuted as a limited edition, numbered collectible hardback for both Bridge lovers and collectors. The 312-page book is the narrative of the many technical, political and financial challenges faced from the late 1940s through the turn of the 21st century. It chronicles the most crucial engineering and design challenges met since the Bridge opened. It is an accounting of the growth of District from its singular responsibility of operating the Bridge for more than three decades to its added responsibility providing regional bus and ferry transit services in the U.S. Highway



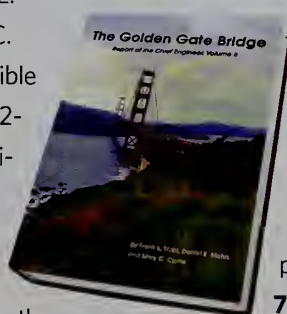
Original Bridge workers (l to r) Heinbockel, Jensen and Ashoff.

101/Golden Gate Corridor starting in the early 1970s. A second edition is now available in soft cover at [www.goldengate.org](http://www.goldengate.org).

In addition, a 70th Anniversary civic luncheon was held to honor three original Golden Gate Bridge workers: Charles Heinbockel, Rolf Johannes Jensen, and Edward Ashoff. Two of these heroic original workers passed away following the 70th Anniversary celebration: Charles Heinbockel died on November 13, 2007, at the age of 96 and Rolf Johannes Jensen passed away on January 12, 2009, at the age of 98.

## 75TH ANNIVERSARY

The Bridge's 75th Anniversary is May 27, 2012. Planning is beginning now for this milestone. Watch for details at [www.goldengate.org](http://www.goldengate.org).





# WORKING THE SPAN

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• HIGHLIGHTS, FACTS AND FIGURES •

Responsibility for the safe and efficient operation and maintenance of the span rests in the Bridge Division, under the direction of the Deputy General Manager for the Bridge Division. The workforce is comprised of about 200 employees that capture the true meaning of the words "team effort," with all of the skilled crafts, trades, security, and service personnel working together to accomplish the critical day-to-day maintenance and safe roadway operations.

### BRIDGE OPERATIONS

Bridge operations personnel are responsible for public safety, security, toll collections, managing the flow of traffic and emergency response. The Bridge captain (formerly known the toll captain) oversees the 24/7 operations that include toll collections, security, and roadway service.



From the toll office, an around-the-clock workforce ensures the smooth flow of traffic across the span. Bridge lieutenants, sergeants, and patrol officers respond to a wide range of inquiries, accidents and emergencies. Also, Bridge patrol officers handle security matters. Toll collectors accept and record manual toll collections in the non-FasTrak-only toll lanes, and are well known for both their friendliness and accuracy.

Lane workers ensure the reversible lanes are in the proper configuration before each morning and afternoon commute period begins. They also respond to any emergency lane change requirements that may arise. Bridge service operators assist disabled vehicles on the Bridge and its approaches and respond to accidents or incidents such as a vehicle fire on the span. Tow service trucks are on site 24-hours a day ready to respond to any emergency.



Bridge electricians



Operating engineer

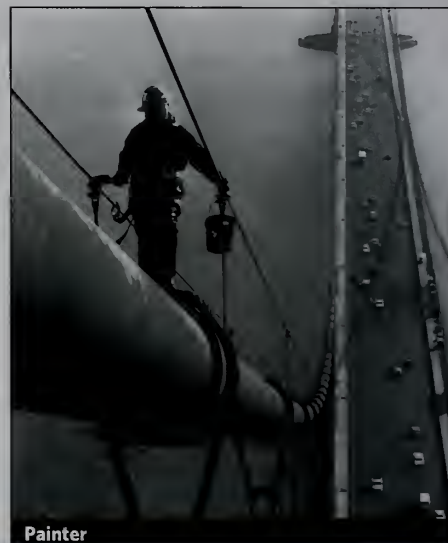




Tow service operator

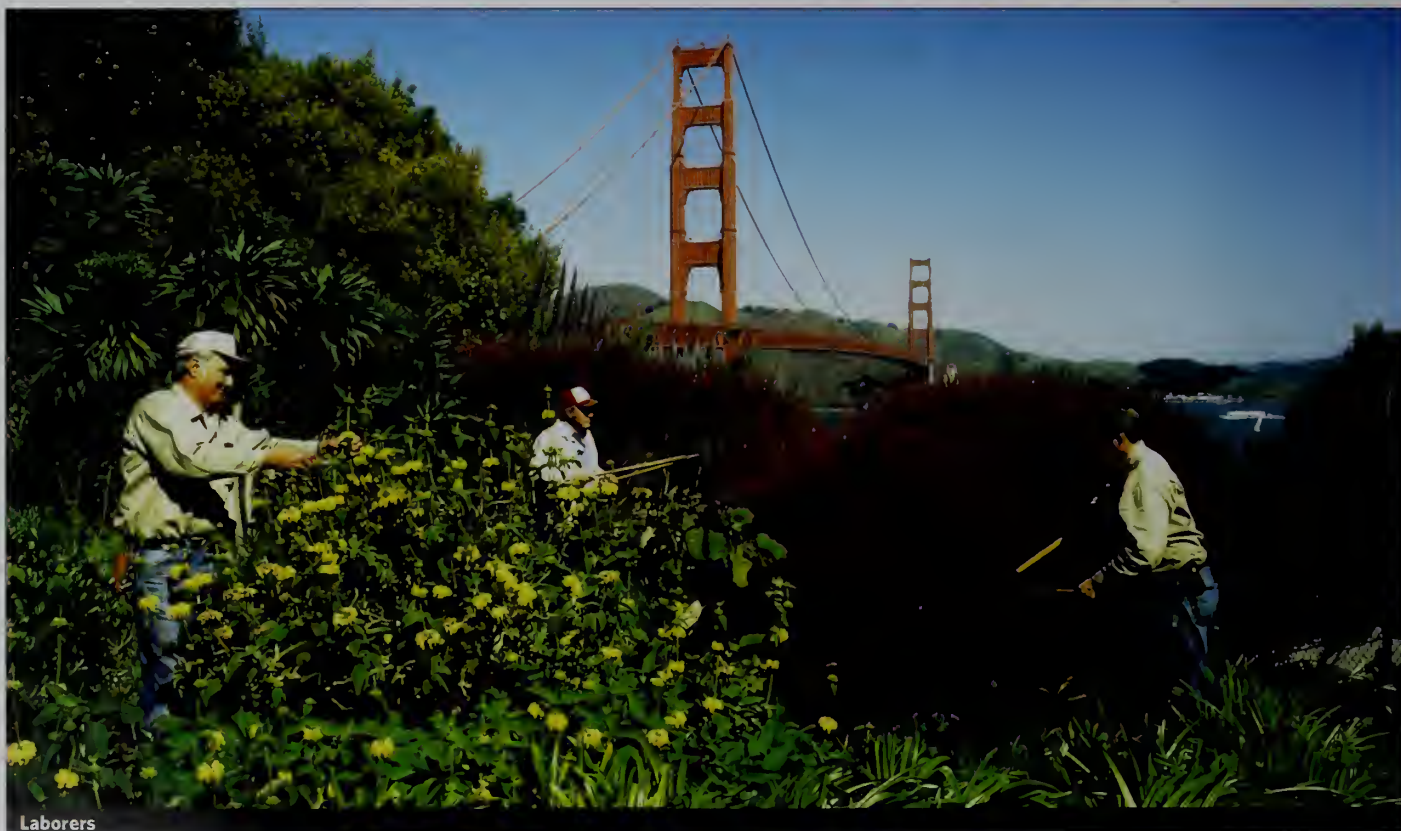


Toll collector



Painter

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Laborers



## BRIDGE MAINTENANCE

Bridge maintenance is responsible for the preservation, repair and upkeep of the span, along with associated equipment, shops, facilities, communication equipment, and vehicles. Four departments carry out these tasks: Electrical, Paint, Ironworker and Operating Engineer, and Facilities/Equipment.

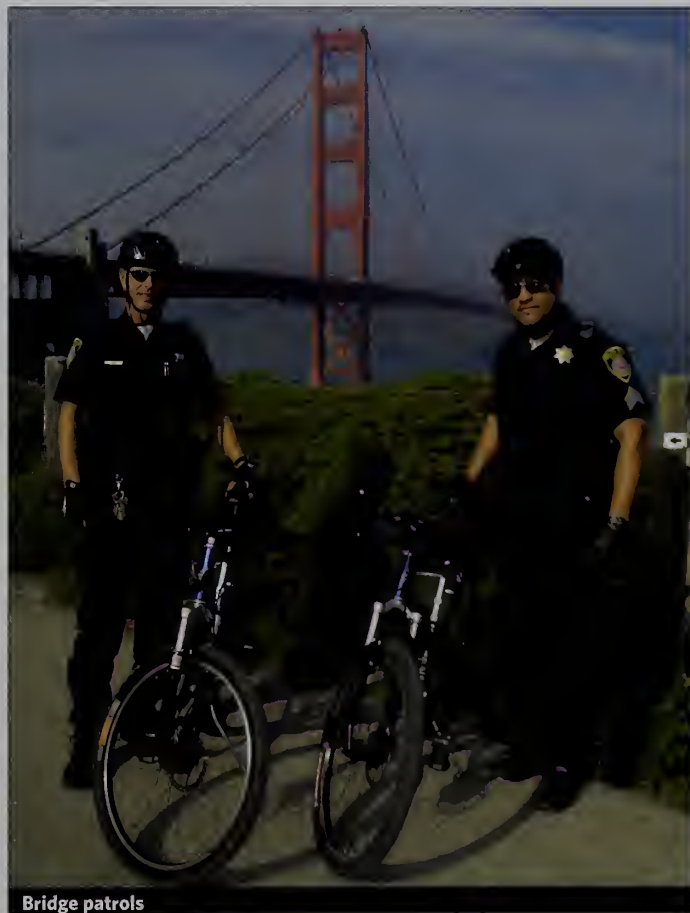
A revered and rugged group of ironworkers and painters battle wind, sea air and fog, often suspended high above the Golden Gate Strait, to repair corroding steel. Ironworkers replace corroding steel and rivets, make small fabrications for use on the Bridge, and assist painters with their rigging. Ironworkers also remove plates and bars to provide access for painters to the

interiors of the columns and chords that make up the Bridge. Painters prepare all Bridge surfaces and repaint all corroded areas.

Operating engineers and mechanics ensure that all rigging, equipment and vehicles are in good repair. Electricians maintain toll equipment and all electrical components on the Bridge. They also maintain and operate the fog horns. Communication technicians ensure that radio communications telephones and security systems are always operational. The streets and grounds team keep the surrounding areas of the Bridge in proper repair for the millions of visitors each year.



Ironworker



Bridge patrols

# MANAGING TRAFFIC





In the 1960s, in response to ever increasing traffic congestion, the District explored several options to reduce and manage traffic congestion on the span. As a fixed, six-lane roadway, the Bridge could not be easily expanded to accommodate traffic growth as was the case with other highways. Instead, it was necessary to focus on how to better manage traffic within the confines of the existing facility.

The District became a nationally recognized leader in the development of several innovative procedures designed to improve the flow of traffic. Most noteworthy is the fact that the Bridge was the first major toll facility to institute one-way toll collection, a model that is now used around the world.

## REVERSIBLE LANES

On August 26, 1962, the Board authorized the implementation of a plan to allow the lane configuration across the span to be modified to better accommodate peak flows, on an experimental basis, beginning September 15, 1962. The traffic control experiment would change the previously standard traffic lane

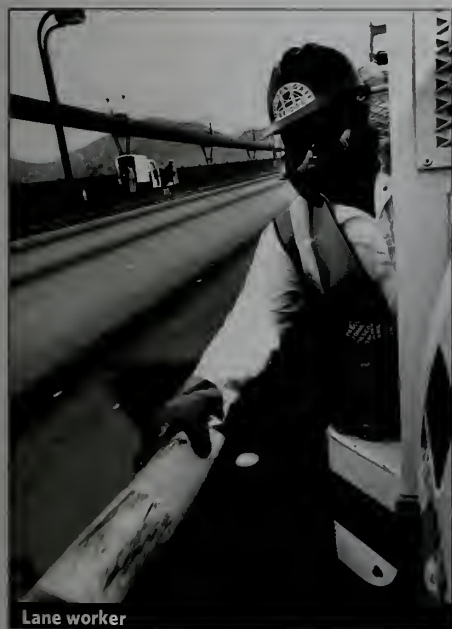
configuration that provided three lanes in each direction by shifting lane direction to allow four of the six lanes to accommodate the heaviest flow of traffic in peak periods.

What began as an experiment became institutionalized on October 29, 1963, when the use of reversible lanes was deemed a permanent traffic management solution to be used. With the reversible lane system, the number of traffic lanes northbound or southbound can be adjusted at any time of day. Bright yellow lane markers are manually placed in "sockets" in the Bridge roadway to clearly identify the San Francisco outbound lanes (northbound) and San Francisco inbound lanes (southbound). To reduce the potential for hazard of a loose tube in the roadway, in July 1965, the height of the tubes was reduced from 30 to 19 inches. Additionally, during the 1970s, the lower portion of the tubes was made less flexible for better stability.

## ONE-WAY TOLL COLLECTION

On October 19, 1968, the Bridge became the first major bridge in the world to offer one-way toll collection. The system

Left: Opening day, May 28, 1937.



Lane worker



FasTrak electronic toll collection began on the Golden Gate Bridge on July 13, 2000.



proved so successful that it has since been instituted on many bridges throughout the world. The implementation of one-way toll collection dramatically improved traffic flow through the toll plaza and decreased the number of accidents and stalls in the toll plaza.

On local interest note: On May 20, 1960, Corte Madera, CA, resident Mr. Bruce Goecker had written a letter to the Board proposing one-way toll collection. On October 11, 1968, Mr. Goecker was introduced at the Board meeting and the Board directed that as part of the initiation of one-way tolls, Mr. Goecker would be the first to cross the Bridge.

### **PUBLIC TRANSIT SERVICES**

With the last of the original Bridge construction bonds due to be retired on June 30, 1971, and with \$22.8 million in reserves, the District was in a strategic position to develop a multi-modal public transit system as a traffic management tool to assist in

reducing the growing traffic congestion on the Bridge. Tolls would be used to subsidize the operation of the transit system.

Golden Gate Ferry (GGF) service was launched between Sausalito and San Francisco, CA, on August 15, 1970. This was followed by the start of Golden Gate Transit (GGT) regional bus service between Sonoma, Marin and San Francisco counties on January 2, 1972. The ferry system was expanded to include service between Larkspur and San Francisco in 1976.

Read the *Birth of a Transit System* section which begins on page 56 to learn more.

### **CARPOOLS**

Since April 1976, in recognition of the advantages of ridesharing, the District has provided free toll passage for carpools during peak weekday commute hours from 5:00-9:00 am and 4:00-6:00 pm. A carpool consists of buses and two-axle vehicles with three or more occupants. Motorcycles are also afforded free toll passage during the same hours.

### **VANPOOLS**

In 1977, the District began promoting vanpooling and established a ridesharing office. In the early years of the program 295 vanpools were established. RIDES for Bay Area Commuters eventually became the regional coordinator for ridesharing programs, and the District disbanded its program circa 1986. The rideshare coordination for the Bay Area is now provided as part of a Bay Area wide service—511 Rideshare, visit [www.511.org](http://www.511.org).

### **CLUB BUS SERVICE**

In February 1971, GGT began a program to contract with private bus operators to provide "Club Bus" services within the U.S. Highway 101/Golden Gate Corridor to areas that are considered uneconomical for conventional, fixed-route GGT commute service. This service is provided to commuters bound for the same destination who form a commute group or club. GGT contracts with a private operator on the group's behalf. As of this writing, four clubs are operating. In 1991, the District began requiring all club services to be wheelchair accessible, and because not all



Toll plaza clock installed in 1949 was replaced in August 2003.

private sector bus operators had lift-equipped buses, GGT has made accessible buses available for lease to private club operators.

## ELECTRONIC TOLL COLLECTION

In 1972, the District began to pioneer the development of an Electronic Toll Collection (ETC) system aimed at increasing traffic flow by reducing toll transaction time. ETC utilizes an electronic device mounted on the vehicle which sends a signal to a computer in the toll booth. The toll is then deducted from an account maintained by the motorist.

Working closely with the International Bridge, Tunnel and Turnpike Association, the District conducted extensive ETC research and development. By 1990, with ETC technology sufficiently advanced, the District had budgeted for an ETC system on the Bridge. However, before a ETC system could be purchased, in September 1990, California Senate Bill 1523 was passed requiring the California Department of Transportation to prepare ETC specifications for all California bridges and toll roads, including the Golden Gate Bridge. As a result, it was not



**FasTrak market share exceeds 70 percent during the morning commute.**

until October 1998, that the District was able to award a contract for a new toll system that would be compatible with ETC systems on State-owned toll facilities. The California ETC sys-

## TRAFFIC SAFETY

With millions of vehicles crossing the Bridge annually, Bridge Operations works very closely with the California Highway Patrol (CHP) and other local law enforcement agencies to ensure a high standard of traffic safety. The CHP have policing authority on the span.

On October 1, 1983, the speed limit was lowered from 55 mph to 45 mph to reduce the potential for accidents. Further, since 1983, the CHP has provided increased traffic safety enforcement on the Bridge and its approaches.

On September 13, 1996, the Bridge was designated a double fine zone to aid in enforcement of the 45 mph speed limit. The double fine zone expired on December 31, 2003. From 1992 to 1996, the accident rate on the Bridge was 0.69 acci-

dents per million vehicle miles. From 1997 to 2001, with the double fine zone in place, the accident rate decreased dramatically to 0.36 accidents per million vehicle miles.

On August 11, 1997, the CHP began using LIDAR technology for speed enforcement on the Bridge.

On March 23, 2003, the District Board, in accordance with California Senate Bill 988, designated the Bridge as a Safety Awareness Zone.

On September 12, 2008, District Board approved the hiring of a consultant team to work with the District to complete the required Environmental Studies and Preliminary Design for a Moveable Median Barrier (MMB) on the Golden Gate Bridge. As of this writing, it is anticipated that a MMB system will be installed by the end of 2011.



Blue Angels perform during Fleet Week.

tem, known as FasTrak, was implemented on the Bridge on July 13, 2000.

The rapid acceptance of FasTrak was well beyond expectations. Within two months of system start-up, the FasTrak market share had grown sufficiently to open the first of several dedicated "FasTrak Only" toll lanes. Within four months, the dramatic rise in the FasTrak market share had eliminated the 15 to 20 minute wait time at the toll plaza during peak commute hours.

### TRAFFIC HIGHS & LOWS

On Monday, January 4, 1982, a devastating rain storm struck the San Francisco Bay Area. Earth slides and flooding covered

the highway and roads north of the Bridge. As a result, on Tuesday, January 5 and Wednesday, January 6, there was very little vehicle traffic across the Bridge. In fact on January 6 just 3,921 southbound vehicles crossed the Bridge. This compares to the average daily southbound count of 37,936 for January 1982.

During the evening commute on October 17, 1989, the Loma Prieta Earthquake jarred the Bay Area with a force measuring 7.1 on the Richter scale. The Bridge withstood, undamaged. During this time of myriad traffic problems, extra bus and ferry trips were added to help smooth the commute as a flood of 30,000 to 40,000 drivers were diverted from the East Bay to Highway 101 and the Golden Gate Bridge due to the failure of a portion of the San Francisco/Oakland Bay Bridge. On October 27, 1989, an all-time record of 162,414 vehicles crossed the Bridge north and southbound.

### CLOSURES DUE TO WEATHER

The Bridge has been closed due to weather conditions just three times:

On December 1, 1951, as gusting winds reached 69 miles per hour, the Bridge was closed for three hours. Engineers inspected the Bridge for damage and declared it structurally sound. They did, however, recommend that lateral bracing be installed. In 1954, the project was completed.

On December 23, 1982, high winds of up to 70 miles per hour closed the Bridge for almost two hours. The Bridge easily withstood the gusts.

On December 3, 1983, once again high winds closed the Bridge for the longest period in its history, 3 hours and 27 minutes. Wind gusts reached 75 miles per hour, but again the Bridge suffered no structural damage.

### CLOSURES FOR VIPs

The Bridge has been closed very briefly on separate occasions for visiting dignitaries including United States President Franklin D. Roosevelt (date not known) and President Charles de Gaulle of France on April 27, 1960.





**T**he following is a chronology of Golden Gate Bridge tolls rates for two-axle passenger vehicles.

**May 23, 1937** 50 cents each way, \$1.00 round trip, with a 5 cent charge if more than three passengers.

**July 1, 1950** 40 cents each way.

**February 1, 1955** 30 cents each way.

**October 1, 1955** 25 cents each way.

**October 19, 1968** 50 cents southbound toll, free northbound.

**March 1, 1974** 75 cents southbound toll, free northbound.

**November 1, 1977** \$1.00 southbound toll, free northbound.

**March 1, 1981** \$1.25 southbound toll, free northbound.

**December 1, 1981** \$2.00 southbound toll on Fridays and Saturdays, \$1.00 on all other days; free northbound.

**January 1, 1989** \$2.00 southbound toll seven days per week, with a thirty-eight percent discount available when purchasing a book of sixteen tickets for \$20.00 (effective toll of \$1.25); free northbound.

**June 11, 1989** \$2.00 southbound toll seven days per week with a seventeen percent discount available when purchasing a book of twelve tickets for \$20.00 (effective toll \$1.66); free northbound.

**July 1, 1991** \$3.00 southbound toll seven days per week, with a twenty-six percent discount available for ticket book purchasers (effective toll \$2.22). A \$20 book with 9 tickets and a \$40 book with 18 tickets were sold; free northbound.

**July 1, 1992** \$3.00 southbound toll seven days per week, with a seventeen percent discount available for ticket book purchasers (effective toll \$2.50). A \$20 book with 8 tickets and

## GOLDEN GATE BRIDGE TOLL HISTORY



Opening Day for vehicular traffic, May 28, 1937.

a \$40 book with 16 tickets are sold; free northbound.

**July 1, 1995** \$3.00 southbound toll seven days per week, with an eleven percent discount available for ticket book purchasers (effective toll \$2.67); free northbound.

**July 13, 2000:** \$3.00 southbound toll seven days per week, with an 11% discount available for tickets book purchasers (effective toll \$2.67) or when using FasTrak electronic toll; free northbound.

**November 15, 2000:** \$3.00 southbound toll seven days per week, with an 11 percent discount available only when using FasTrak electronic toll (effective

toll \$2.67); free northbound.

**July 1, 2000:** 11 percent discount (effective toll \$2.67) for FasTrak users eliminated and FasTrak toll set at \$3; free northbound.

**September 1, 2002:** Two-axle vehicles: \$5 cash and \$4 FasTrak. For multi-axle vehicles \$2.50 per axle; free northbound.

**September 2, 2008:** Two-axle vehicles: \$6 cash and \$5 FasTrak. For multi-axle vehicles, \$3 per axle for cash toll and \$2.50 per axle for FasTrak toll; free northbound.

The District offers a discretionary toll discount program for qualifying persons with disabilities. The program provides a reduced toll to qualifying disabled individuals who cannot utilize District transit services. The discount toll is provided to persons with disabilities who are operating or are a passenger in a two-axle vehicle with a valid District-issued identification card. For more information call 415-257-4407, or send an email to: [customerservice@goldengate.org](mailto:customerservice@goldengate.org).

## HOW ARE TOLL REVENUES SPENT?

The District is unique among transit operations as it provides GGT and GGF transit services without support of direct property tax, sales tax measures, or dedicated general funds. As a result, the District uses the surplus Bridge toll revenue to subsidize the District's regional and trans-bay transit services in conjunction with State and local funds received from Marin and Sonoma counties.

The District operates the Bridge, bus and ferry systems using limited revenue sources which include Bridge tolls; passenger fares; revenue from programs including investment income, concessions and advertising; revenues from a contract with Marin Transit for operation of local bus service; government grants; and, when necessary, toll reserves.

### ADOPTED BUDGET FOR FISCAL YEAR 2008/2009 (OPERATING AND CAPITAL)

Revenues	in millions	% of Total Revenues	Expenses	in millions	% of Total Expenses
Golden Gate Bridge Tolls	\$86.2	43%	Transit Operations	\$102.4	52%
Bus and Ferry Transit Fares	22.8	11%	Transit Catital	22.5	11%
Revenues from investment income, concessions, advertising, leases, etc.	14.1	7%	Bridge Operations	61.8	31%
Revenues from Marin Transit Local Contract	13.8	7%	Bridge Catital	12.8	6%
State and Local Grants	45.0	23%	Total Expenses	\$199.5	100%
From Reserve Funds	17.6	9%			
Total Revenues	\$199.5	100%			

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**J**ust over 3.3 million vehicles crossed the Golden Gate Bridge during the first full year of operation. By 1967, annual crossings had grown over 750 percent to 28.3

million vehicles. The Bridge was close to reaching the saturation point and the public needed an alternative to the private automobile.

As the traffic congestion continued to increase, several studies were undertaken to identify alternate means of travel between Marin County and San Francisco. The "San Francisco-Marin Crossings" report of May 1967 looked at the possibility of building a second bridge. Various lower deck options for the Bridge were investigated. As a fixed, six-lane roadway, the Bridge could not be as easily expanded to accommodate traffic growth as was the case with other highways. Marin County Transit District (now Marin Transit) considered taking over the existing Greyhound bus system as a commute service to San Francisco.

At the time, Greyhound provided transit between Marin

## BIRTH OF A TRANSIT SYSTEM

County and San Francisco and it was so unprofitable that management wanted to abandon it.

While these studies proceeded, the District was able to provide some relief to

the traffic problem. In 1963, reversible lanes were inaugurated on the Bridge, greatly aiding the flow of traffic during the heavy peak periods. In 1968, the Bridge was the first in the world to offer one-way toll collection. The system proved so successful it has been instituted on many bridges throughout the world.

By the late 1960s, the famed span was at capacity during the morning commute. The original construction bonds were due to be retired and the District had approximately \$22.8 million in reserves. An innovative solution was needed to provide much needed relief to the traffic congestion.

On November 10, 1969, the California State Legislature passed Assembly Bill 584 authorizing the District to develop a transportation facility plan for implementing a mass transportation program in the U.S. Highway 101/Golden Gate Corridor. This

was to include any and all forms of transit, including ferry. At that time, the word "Transportation" was added to the District name to indicate its new commitment to public transportation. The Legislature did not give the District the authority to levy taxes, nor could Bridge tolls support local transit services—only intercounty, regional service could be subsidized by Bridge tolls. But the mandate was clear: reduce traffic congestion on the Bridge and on the adjacent corridor to the north.

On December 10, 1971, California Assembly Bill 919 was passed requiring the District to develop a longer range transportation programs for the corridor. After extensive public outreach including 21 public hearings in six counties, a unified system of buses and ferries emerged as the best means to serve the people of Marin and Sonoma counties. This network is commonly known



Greyhound coach restored by GGT.



**M.S. San Francisco departs Larkspur.**

today as Golden Gate Transit (GGT) and Golden Gate Ferry (GGF).

On August 15, 1970, the District took its first step into the transit business by inaugurating GGF service from Sausalito, CA, in southern Marin County to San Francisco. GGT basic service from Sonoma and Marin counties to San Francisco began on January 1, 1972, and was followed by the start of GGT commute service on January 3, 1972. On December 13, 1976, a new ferry route was initiated between Larkspur, in central Marin County, and San Francisco.

The capital cost of the transit system infrastructure was financed by a combination of federal grants from the Urban Mass Transportation Administration (UMTA) and District toll reserves. For example, UMTA funded \$14.3 million of the \$20 million required to purchase the buses and construct bus maintenance and storage facilities in San Rafael, Novato and Santa Rosa. District toll reserves met the \$5.7 million remaining balance.

Since the introduction of GGT and GGF, both systems have become an integral part of life in the North Bay counties of Marin and Sonoma. These services have been reshaped over the years to meet the changing needs of growing communities. And through its growth, GGT and GGF have continued to fulfill the mission of reducing automobile traffic and congestion while contributing to the protection of the environment with efficient, reli-



**Golden Gate Transit coach with exterior bike rack.**

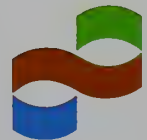
able and cost-effective alternatives to the private automobile. In 2008, it was estimated that *without* GGT and GGF, motorists would experience an increase in Bridge traffic of about 32 percent during the peak weekday morning commute hour.

## DISTRICT LOGO

In 1971, a District logo was developed by Landor & Associates of San Francisco. The logo symbolized and united the three operating divisions—

Bridge, Bus and Ferry—under one common theme. The District's Fiscal Year 1970/1971

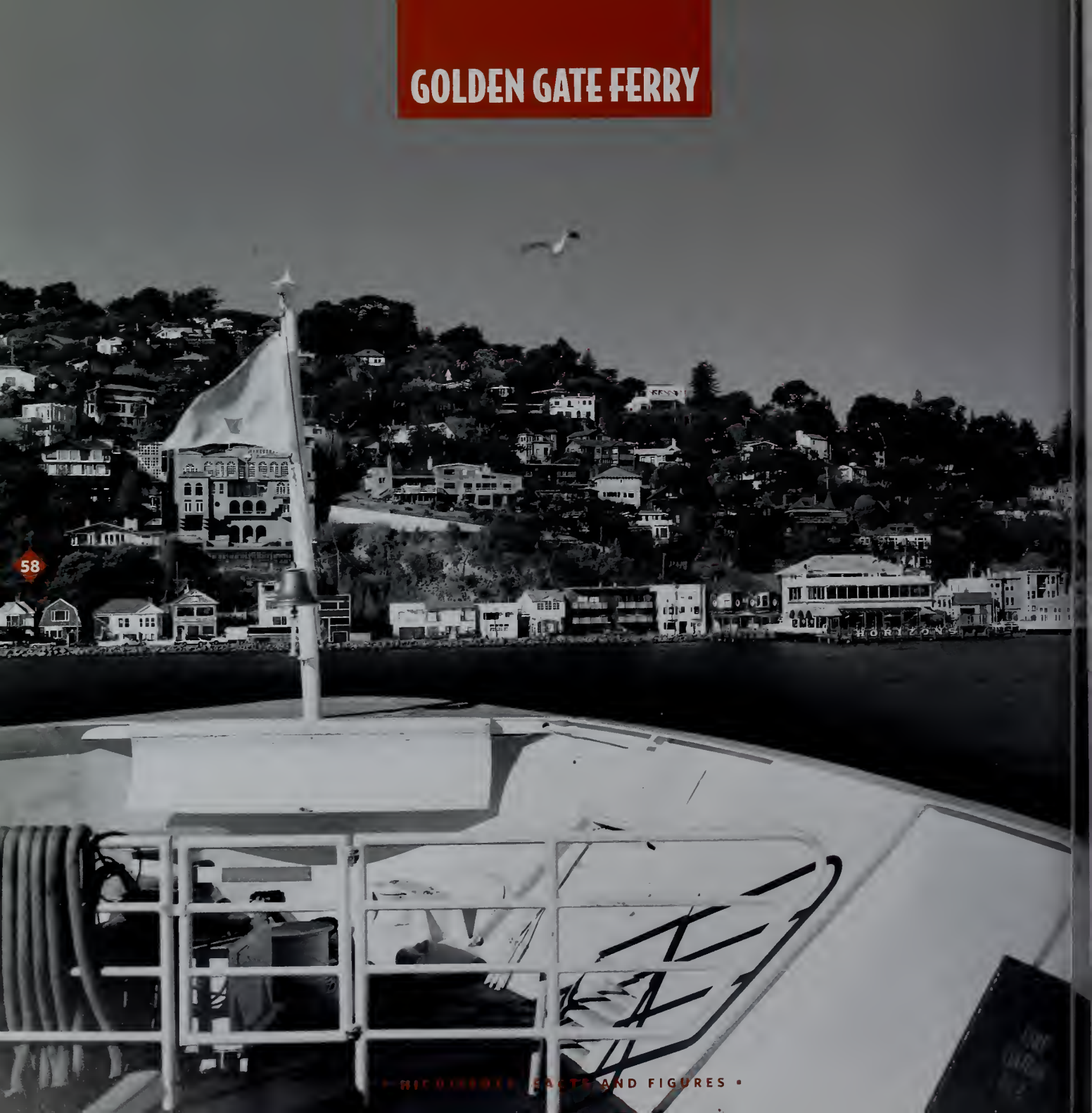
Annual Report states, "The green in the logotype design suggests surface transportation over the green hills of the northern counties; the blue signifies the District's commitment to increasing ferry travel on the waters of the San Francisco Bay; the bright orange represents the famous span of the Golden Gate Bridge."



In July 2001, the District adopted a new logo which includes the symbol of the Golden Gate Bridge as the primary branding feature.



# GOLDEN GATE FERRY



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Crossing the San Francisco Bay by ferry dates back to 1850 when ferries operated between San Francisco and Oakland. In 1868, a group of San Francisco businessmen formed the Sausalito Land and Ferry Company to operate ferry service between Sausalito, located in southern Marin County, and San Francisco. Prior to the opening of the Golden Gate Bridge, ferry service flourished. Then, following the opening of the Bridge in May 1937, ferry service between Marin and San Francisco declined and eventually came to an end on Friday, February 28, 1941. For the next 29 years, driving across the Bridge was the only way to travel directly between Marin and San Francisco.

## SAUSALITO FERRY

Ironically, the very same public agency that contributed to the decline of ferry travel on the San Francisco Bay was called upon to bring it back. Working from a 1969 study of water transit conducted by the counties of Marin and San Francisco, the District purchased the *M.V. (Motor Vessel) Point Loma* in June 1970. The twin-engine, diesel-powered ferry was built and operated as an excursion boat in San Diego, CA. It carried 575 passengers at a speed of 15 knots or 17 miles per hour (mph). The vessel was

reconditioned, rechristened the *M.V. Golden Gate* and placed into service on August 15, 1970, between Sausalito and San Francisco—the official start of Golden Gate Ferry (GGF) service.



Sausalito Ferry passes Golden Gate Bridge enroute to San Francisco.

After more than 35 years in service, the *M.V. Golden Gate* was retired from the fleet on March 26, 2004. The *M.V. Golden Gate* was a sentimental favorite among regular commuters, having carried approximately 21 million passengers over 1.3 million nautical miles during 432,108 round trips.

Following the retirement of the *M.V. Golden Gate*, the Sausalito

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Left: The *M.V. Golden Gate* approaches Sausalito. Above: The now retired *M.V. Golden Gate* and *M.S. Marin* at the Larkspur Ferry Terminal.



New seating and carpeting were added during the *M.V. Marin* refurbishment.



Newly painted exterior of the refurbished *M.V. Marin*.



Golden Gate Larkspur Ferry Terminal



Ferry route is now served by one of GGF's original high-capacity Spaulding vessels—the *M.S. Marin* which was originally placed into commute service between Larkspur and San Francisco on December 13, 1976 and refurbished in 2007.

The Golden Gate Sausalito Ferry has no dedicated ferry terminal in Sausalito and operates from a ferry landing in downtown Sausalito at Humboldt and Anchor streets.

### LARKSPUR FERRY

Acting on the August 1970 report commissioned by the District, *Golden Gate Commuter Ferryboat System, San Francisco - Marin Crossing*, and prepared by Philip F. Spaulding and Associates, Seattle, WA,

the GGF system was expanded with the addition of new service between Larkspur and San Francisco. A portion of the north bank of Corte Madera Creek located on the Hutchinson property was designated as the new home for the main ferry terminal.

Between 1972 and 1977, three 715-passenger ferry vessels, designed by Spaulding and Associates, were constructed. These vessels are referred to even today as the "Spaulding" vessels.

The first of the new ferries, the *G.T. (Gas Turbine) Marin*, was placed into commute service between Larkspur and San Francisco on Monday, December 13, 1976, and, at the same time, a new Larkspur Ferry Terminal was dedicated. The second vessel, the *G.T. Sonoma*, was added to the daily schedule on March 7, 1977. The third vessel, the *G.T. San Francisco*, arrived September 12, 1977. Initially, two of the three ferries were kept in daily service, with the third serving as an alternate. By the first anniversary of the Larkspur service, over 1.1 million customers had used the service.

Initial passenger amenities at the Larkspur Ferry Terminal (LFT) site included an 18,000 square foot futuristic open air



"space frame" designed by the firm Braccia, Debrer & Heglund, and a 1,000 capacity parking lot was constructed.

LFT has a covered paid passenger waiting area, restrooms, and can accommodate up to 72 bikes in racks provided at the facility. The facility is wheelchair accessible.

In late 2008, the parking lot was reconfigured and now has 1,808 parking spaces.

### SAN FRANCISCO TERMINAL

On June 17, 1978, the Golden Gate San Francisco Ferry Terminal (SFFT) facility was dedicated. The terminal is located at the foot of Market Street, behind the historic San Francisco Ferry Building. In 2003,

a four-year renovation of the San Francisco Ferry Building was completed and is now a major draw for locals as well as tourists with its wide range of specialty shops and open air markets.

On August 24, 2001, the SFFT was rededicated as the Stephan C. Leonoudakis San Francisco Ferry Terminal in honor of Stephan C. Leonoudakis, a retired member of the District's Board of Directors (Board). Leonoudakis was recognized for his efforts as a key leader in the development of ferry service in the early 1970s. He was appointed to the Board in December 1962. Leonoudakis championed ferries as an alternative to the automobile throughout his nearly forty years of dedicated service as a Board member.

SFFT has customer restrooms, vending machines, racks for up to 15 bikes and is wheelchair accessible.

### SPAULDING VESSELS REPOWERED

By Fiscal Year 1977/1978, with annual ridership topping 2 million for the first time, there was demand for even more ferry service. Fuel prices were rising at an alarming rate. When the Spaulding vessels were designed, fuel cost 11 cents per gallon





All Golden Gate Ferry vessels allow bicycles aboard.

and, by the early 1980s, it was selling for more than \$1 per gallon. To provide more frequent service and lower maintenance costs, the three Spaulding vessels were converted from their original gas turbine water jet propulsion systems to twin diesel engines and twin propellers.

In December 1983, the first of the Spaulding G.T. vessels was sent to San Diego for conversion to diesel power and by November 17, 1985, all three Larkspur ferries had returned and were rechristened with the designation M.S. (Motor Ship).

With a speed of 20.5 knots or 23.6 mph, and a travel time of 45 minutes, the Spauldings could still cross the San Francisco Bay in times comparable to those driving to San Francisco across the Golden Gate Bridge. Beginning in November 1985, for the first time, all three Spaulding vessels provided service between Larkspur and San Francisco allowing expansion of the commute, mid-day and weekend schedules. The following year, ridership increased over 10 percent. At the same time, fuel costs dropped 60 percent and maintenance costs were reduced by \$300,000 annually.

A second repowering of the Spaulding vessels occurred in March 2001 when GGF received \$1.5 million through the Bay

Area Air Quality Management District's Carl Moyer grant fund program to replace all six engines (two per vessel) with more efficient engines. The installations were completed by fall 2002.

### CATAMARANS ADDED TO FLEET

On Tuesday, September 8, 1998, the most critical improvement to the GGF system was introduced. GGF expanded services between Larkspur and San Francisco with the launch of the first high-speed catamaran, the *M.V. Del Norte*. This significant milestone offered customers new commute options that included more frequent trips, better departure times, and faster crossings.

The *M.V. Del Norte* is a 135-foot, 390-passenger, two-deck lightweight catamaran propelled by four diesel engines. It is capable of cruising at 36 knots or 41.4 mph, as compared to a Spaulding vessel that travels at 20.5 knots or 23.6 mph. The speed of the high-speed catamaran reduced overall crossing time between Larkspur and San Francisco from 45 minutes to 30 minutes.

With the addition of the *M.V. Del Norte*, the number of week-day round trips was increased from 16 trips per weekday to 26. The Larkspur route continued to be served by three Spaulding vessels and the *M.V. Del Norte*.



Deckhand



Vessel Master

In April 2000, with Larkspur ridership up more than 10 percent, a contract to construct a second high-speed catamaran was awarded. The christening ceremony for the *M.V. Mendocino* was held on July 20, 2001, in Noyo Harbor near Fort Bragg in Mendocino County, as the vessel was making its way to Larkspur from Freeland, WA, where it was built by Nichols Bros. Boat Builders.

The *M.V. Mendocino*, a 141-foot, three-deck, 450-passenger, high-speed catamaran entered into service on the Larkspur route on Monday, September 10, 2001, along with the introduction of a newly designed free shuttle bus-to-ferry system (which was subsequently eliminated in 2003 due to low ridership and high operating costs). Offering an increased passenger capacity of 450, up from the 390-passenger *M.V. Del Norte*, the *M.V. Mendocino* also makes the crossing to/from San Francisco in 30 minutes.

With two high-speed catamarans, the Larkspur route now offered 41 high-speed weekday crossings, up from 26. With the addition of the *M.V. Mendocino*, the Larkspur route was served by the two high-speed catamarans, and just one Spaulding vessel.

From December 2002 to December 2003, to ensure its long-term viability as substantial warranty work was required on the *M.V. Mendocino*, the vessel was taken out of service and sent

back to the original builder who made the necessary repairs at no cost to GGF. It was determined that the aluminum used for the hull was constructed using a process that did not meet stringent marine engineering and U.S. Coast Guard (USCG) regulations.

To reduce GGF operating cost, in July 2004, Larkspur Ferry service was reconfigured so that just the two high-speed catamarans would provide the weekday service (with the exception of one late afternoon San Francisco departure which is operated by a Spaulding vessel due to the large number of returning commuters at that time).

### **M.S. MARIN REFURBISHED**

On October 27, 2006, the Board awarded a contract for a complete refurbishment of the *M.S. Marin*. The project was funded using 80 percent Federal Transit Administration grant funds, with the remainder coming from Bridge tolls.

In November 2006, after 30 years plying the San Francisco Bay, the *M.S. Marin* was taken out service for extensive renovations including all new interior and exterior seating, paint, deck coverings and carpeting, ceilings and wall paneling, lighting, public address system, restrooms, refreshment stand, security cameras, windows, bicycle racks (for up to 70 bicycles), modern

accessibility lift, as well as generator and electrical systems. The vessel returned to service on the Sausalito Ferry route on July 28, 2007.

## TWO MORE CATAMARANS

In January 2009, GGF finalized the purchase of two Washington State Ferry (WSF) vessels at a cost of \$2 million each. They were built in the late 1990s, operated for three years and had been inactive since September 2003. Both of the WSF vessels require refurbishment to provide "like-new" vessels at an estimated cost of approximately \$9.4 million per vessel.

The *M.V. Snohomish* is scheduled to arrive in Larkspur in May 2009 and be renamed the *M.V. Napa*. To provide customers continuity with high speed service during the repowering of the *M.V. Del Norte*, GGF will place the not-yet-refurbished *M.V. Napa* into service as a substitute for the *M.V. Del Norte*. In 2010, the *M.V. Napa* be completely refurbished. The second WSF vessel, the *M.V. Chinook*, will be refurbished beginning in late 2009 and ready for service in 2010.

## DAY-TO-DAY OPERATIONS

Headquartered in Larkspur, CA, under the direction of the Deputy General Manager for the GGF Division, about 90 employees, working from the Larkspur Terminal, San Francisco Terminal and the Sausalito Ferry Landing, are responsible for the operation of the ferry fleet. The workforce includes vessel masters (captains), operations supervisors, ticket agents, terminal assistants, deckhands, mechanics, and storekeepers, in addition to supervisory and administrative personnel.

Each weekday, operations supervisors, terminal personnel, vessel masters and crew arrive by 5:00 am to prepare the vessels for departure. The team effort begins in the vessel's power plant as operators conduct daily inspections of engines, generators, bilges, tanks and other key systems. Deckhands replenish the water supply before double-checking the cleanliness of passenger areas. Vessel masters, working from the pilot house, receive updates on weather, tidal and traffic conditions as ticket agents, terminal assistants and operations supervisors begin greeting passengers.



San Francisco Ferry Terminal is located behind the San Francisco Ferry Building at the foot of Market Street.





**M.V. Mendocino**

By 5:50 am, the first of many trips across San Francisco Bay is underway. The round-the-clock activity continues back on shore with maintenance crews and administrative staff ensuring that all is running smoothly. Swing and grave shift crews work throughout the night inspecting, maintaining and repairing vessels in preparation for another day's operation on the bay.

## **VESSEL AND FACILITIES MAINTENANCE**

All of the vessels are part of an ongoing maintenance program established to assure reliable and safe mechanical



**Multi-agency emergency response drill tests mutual aid plan.**

operation. In addition to daily and weekly inspections, all vessels must undergo annual dry docking for a rigorous top to bottom inspection and other modifications as required by USCG standards.

The depths in the Larkspur Channel must be maintained by periodic dredging in order for the vessels to be able to reach the Larkspur Terminal. The 13,000-foot channel is dredged periodically to maintain a depth of 13 feet. Shoaling (a process whereby the channel progressively fills with silt over time) occurs at an average rate of a half-foot per year.

## VESSEL PARTICULARS

		M.V. SPAULDINGS DEL NORTE	M.V. MENDOCINO
Number of Vessels	3	1	1
Year Delivered	1976 & 1977	1998	2001
Number of Decks	3	2	3
Passenger Capacity	715	390*	450**
Bicycle Capacity	***	15	15
Wheelchair Accessible	yes	yes	yes
On Board Refreshments	yes	yes	yes
Restrooms	yes	yes	yes
Propellers	Two	****	****
Service Speed (knots)	20.5	36	36
Length, overall	169'-1"	135'-4"	141'-1"
Beam, extreme	34'-3"	39'-4"	34'
Draft, loaded	6'	5'	4'-9"
Displacement			
Loaded (Long Tons)	265	170	190
Gross Tonnage	99.89	99	87
Fuel Capacity			
(U.S. Gallons)	10,375	3,400	4,000
Potable Water Capacity			
(U.S. Gallons)	1,668	600	1,000

All vessels have aluminum hulls and operate using #2 diesel fuel.

\* The M.V. *Del Norte* was originally configured to accommodate 325 passengers. This was increased to 390 in 2004.

\*\* In 2001, the passenger capacity on the M.V. *Mendocino* was increased to 450 with the addition of seating on the upper deck.

\*\*\* The M.S. *Marin* can accommodate up to 70 bicycles, while the other two Spaulding vessels (M.S. *Sonoma* and M.S. *San Francisco*) can accommodate up to 25 bicycles.

\*\*\*\* M.V. *Del Norte*, M.V. *Mendocino*, are propelled by four diesel engines driving four waterjets.



M.V. *Del Norte* at the Larkspur Ferry Terminal.

## SERVICES DURING EMERGENCIES

The GGF system has played an important role during regional emergencies over the years. Here are a few key examples:

- In January 1982, a massive rainstorm hit the North Bay. Virtually cut off from San Francisco due to mudslides and flooding, more than 16,000 passengers relied upon GGF to cross the San Francisco Bay.
- Following the October 17, 1989, Loma Prieta Earthquake south of San Francisco, the Oakland-San Francisco Bay Bridge was closed for one month. During this time, GGF ridership increased significantly.
- During the week of September 8, 1997, twenty-six hundred workers shut down San Francisco's Bay Area Rapid Transit (BART) system when they went on strike. Larkspur Ferry was an alternate choice, and ridership increased significantly during the strike.
- Over Labor Day weekend 2007, the Oakland-San Francisco Bay Bridge was closed in both directions for necessary seismic retrofit work. During this time, to offer alternatives to motorists, GGF added service to both Sausalito and Larkspur routes.

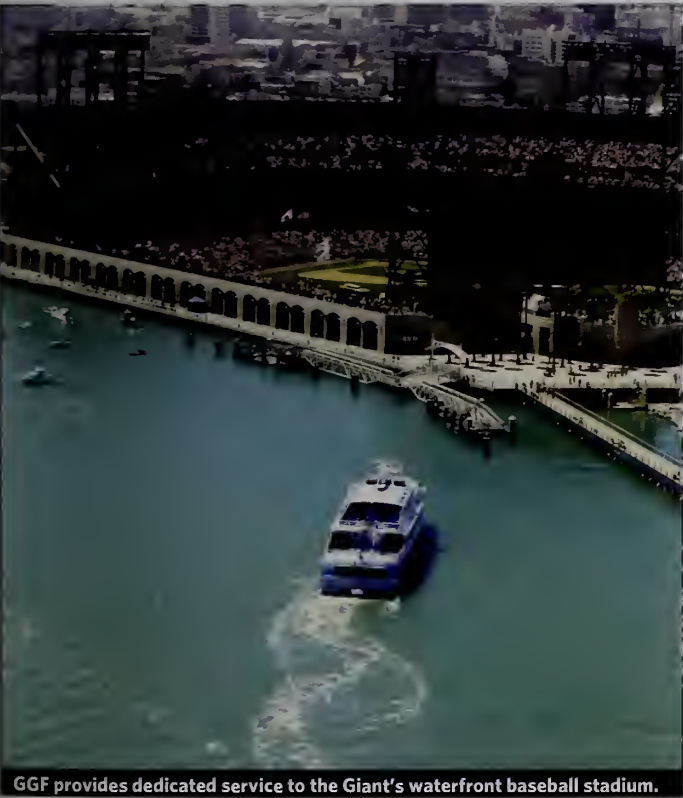
FERRY RIDERSHIP

Golden Gate Ferry Ridership by Fiscal Year (ending June 30)

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Annual Larkspur & Sausalito	1,885,618	1,652,420	1,596,121	1,660,771	1,749,608	1,870,169	2,024,935	1,979,843
Annual Larkspur	1,451,237	1,311,782	1,269,643	1,276,373	1,334,644	1,402,668	1,477,762	1,413,283
Annual Sausalito	434,381	340,638	326,478	384,398	414,964	467,501	547,173	566,560

SPECIAL FERRY SERVICES

Since March 31, 2000, dedicated San Francisco Giants Baseball Ferry Service has been provided between Larkspur and the newly opened waterfront ball park located in downtown San Francisco. This special service has become a favorite mode of transportation from the North Bay to the ball park due to its convenience.



GGF provides dedicated service to the Giant's waterfront baseball stadium.

Since 1992, added "Bay to Breakers" Ferry Service has been provided for race participants in the annual San Francisco race whose start line is just blocks from the SFFT.

From 1979 to 2005, an annual Commemorative Ferry Ride was held on the anniversary of the of the 1906 Earthquake—April 18—in honor of quake survivors. In keeping with the spirit of emergency assistance that was offered by tugboats, fireboats, ferryboats and military vessels to the people of San Francisco after the great quake, GGF provided a backdrop for remembering the heroes, reminiscing and visiting with others who were on the scene. The service was suspended as the number of quake survivors had dwindled to a handful.

FERRY ROUTES

Larkspur to	11.25 nautical miles or
San Francisco	13.01 statute miles
Sausalito to	5.5 nautical miles or
San Francisco	6.33 statute miles

SCHEDULED TRIPS

Larkspur/San Francisco	41 weekday crossings
	9 weekend/holiday crossings
Sausalito/San Francisco	18 weekday crossings
	13 weekends/holiday crossings

Ferries do not operate on New Year's Thanksgiving and Christmas days



# GOLDEN GATE TRANSIT



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**G**olden Gate Transit (GGT) launched its new bus service with the purchase of 112 General Motors "New Look" coaches. Each coach carried 45 passengers and was delivered with an environmental improvement package to ensure the cleanest operation using the current state-of-the-art equipment. The buses were specially designed to appeal to the Marin and Sonoma commuter market with air conditioning, highback reclining seats, overhead luggage racks and independent reading lights. Additionally, GGT purchased 20 standard city-type buses to provide local service within Marin County under contract to Marin County Transit District (now Marin Transit).

## REGIONAL BUS SERVICE

GGT provides two types of regional bus service: basic and commute. On January 1, 1972, basic bus service across the Golden Gate Bridge was launched and on January 2, 1972, peak period commute bus service began.

Taking over the existing Greyhound service, within a month, GGT carried an average of 5,500 passengers to and from San Francisco each day during commute periods. Previously, Greyhound had carried 3,500 passengers. By Fiscal Year 1974/1975, GGT ridership peaked at 8.8 million riders. The highest ridership was recorded in Fiscal Year 1982/1983 and topped 10.9 million riders. Today, GGT serves more than 7 million passengers, 1,000 bus stops and operates nearly 1,000 bus trips per weekday.

### Basic Service

Today, basic service operates daily service throughout the day and evening between San Francisco, Marin, Sonoma and Contra Costa counties. Basic service began with service from Marin and



Bus operator

Sonoma counties to/from San Francisco. In March 1993, basic service was expanded to include a new bus connection across the San Rafael-Richmond Bridge into Contra Costa County, via Route 40/42. This service provides an important regional link with BART and Alameda-Contra Costa Transit. The Metropolitan Transportation Commission, the regional planning and funding oversight agency for Bay Area public transit operators, allocates funding for this service.

In 2003, due to budgetary constraints, the frequency of basic service was reduced. Further, basic service was

reduced to five routes, down from nine at the height of service levels provided in the 1990s.

Today, basic service carries up to 3,300 weekday riders to/from San Francisco and an average of 675 weekday riders across the San Rafael-Richmond Bridge.

### Commute Bus Service

Commute bus service provides weekday commute period service, mornings and evenings, at frequent intervals, between San Francisco, Marin, Sonoma and Contra Costa counties. Buses operate at regular intervals of 15 to 60 minutes depending on the time of day. Today, GGT operates 21 commute routes, down from a high of 25 commute routes at the height of service levels provided in the 1990s.

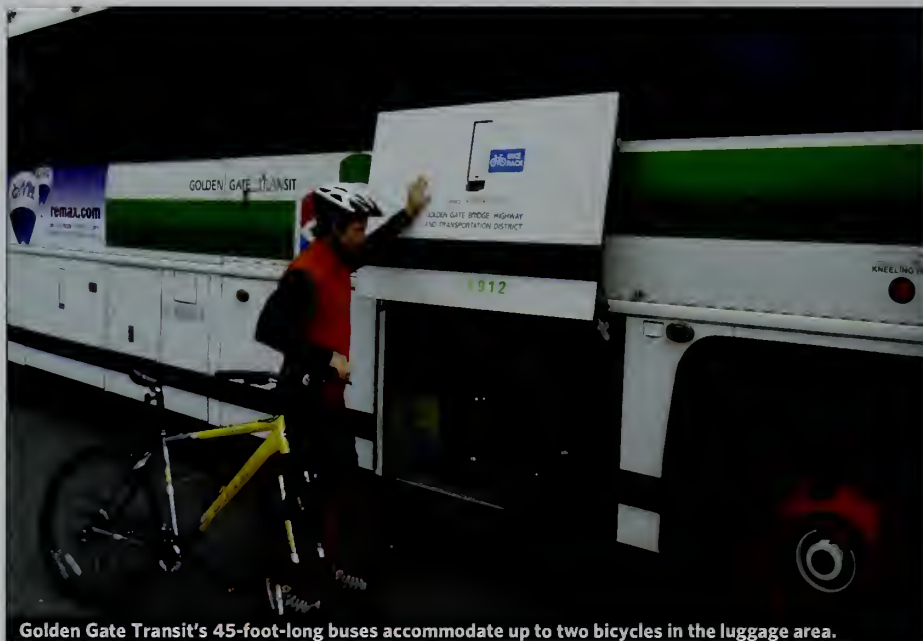
### Ferry Shuttle Service

In 2003, all free bus-to-ferry shuttle services were eliminated due to low ridership and high operating costs.

## MARIN COUNTY LOCAL BUS SERVICE

The Marin County Transit District, now known as Marin Transit, was formed by a vote of the people of Marin County in 1964. Marin Transit has the responsibility for setting the level of local





Golden Gate Transit's 45-foot-long buses accommodate up to two bicycles in the luggage area.



The entire fleet is wheelchair accessible.

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transit service and the fares for travel within Marin County. Marin Transit contracts with other providers including GGT for local bus services.

On December 15, 1971, GGT began operation of local bus service within Marin County under a contract with Marin County Transit District, now known as Marin Transit. Under state law, the District is restricted from subsidizing intracounty (within a county) service, and therefore, Marin local bus service is subsidized by Marin County. Under the current contract with Marin Transit, which extends until 2011, GGT operates 12 routes within Marin County.

In November 2004, Measure A was passed by Marin County voters. Among several transportation initiatives, Measure A provides for improvement to the local transit system through the allocation of 55 percent of the sales tax revenues. The Transportation Authority of Marin (TAM) was established as the public agency responsible for the allocation and use of sales tax funds generated by Measure A. For local bus riders who travel

within Marin County, Measure A funds are being used to subsidize existing local bus services and to provide funds for physical improvements (purchase of buses) and improvements to bus service when possible.

### MUIR WOODS SHUTTLE

Since 2004, to better enjoy the wonders of the Muir Woods National Monument without fighting traffic, GGT Route 66 Muir Woods Summer Shuttle has provided service between southern Marin and Muir Woods. The service is provided under contract with Marin Transit and offers connections to/from the Sausalito Ferry Landing from Memorial to Labor Day weekend.

### AMERICAN WITH DISABILITIES ACT

The Americans with Disabilities Act (ADA) was signed into federal law on July 26, 1990, and prohibits discrimination against persons with disabilities in the areas of employment and public services, including transportation, public accommodations, private services and telecommunications. The District is in full compliance with the standards developed in response to the law, and



has made the necessary modifications to its facilities, programs and services.

The GGT fleet has been 100 percent lift equipped since Fiscal Year 1995/1996. Additionally, all GGF vessels are accessible. Two publications aimed at assisting persons with disabilities in using GGT and GGF services are available at [www.goldengate.org](http://www.goldengate.org): *Intercounty Paratransit Handbook* and *Welcome Aboard - Your Accessible Transit Services Handbook*.

### **INTERCOUNTY PARATRANSIT SERVICE**

ADA requires public transit operators to provide paratransit service to persons with disabilities who are unable to use accessible bus and other fixed route transit services. GGT is responsible for providing intercounty paratransit service between Marin,

Sonoma, San Francisco and Contra Costa counties, while local operators are responsible for paratransit services for travel within Marin, San Francisco and Sonoma counties.

In July 1992, the District adopted a Joint Paratransit Plan outlining the District's program for providing intercounty paratransit services. The District's intercounty paratransit service began November 1, 1993.

### **C. PAUL BETTINI TRANSIT CENTER**

As GGT continued to grow through the late 1970s and early 1980s, it became clear that a main interchange terminal, or transit hub, was necessary for passenger transfers and connections. Such a hub would also improve the efficiency and cost-effectiveness of the bus system.



On November 9, 1990, a ground breaking ceremony was held for the \$3.7 million C. Paul Bettini San Rafael Transit Center (SRTC) in San Rafael, CA. On January 12, 1992, GGT celebrated the grand opening of the SRTC and the 20th Anniversary of GGT service.

The SRTC instantly proved to be a meaningful step towards better serving transit customers by providing improved, more cost-effective operations. It provides a link between GGT, paratransit providers, airport transportation and taxis and has become the focal point of transit connections in central Marin County. It also provides passenger facilities with covered loading platforms, restrooms, food and beverage concessions and bicycle racks.

## **BUS OPERATIONS**

Headquartered in San Rafael, CA, GGT is the largest division of the District's three operating divisions. GGT employs approximately 400 administrative, professional, managerial and skilled employees. Under the direction of the deputy general manager for GGT, the bus fleet is safely and effectively operated and maintained.

GGT begins the day before sunrise as dispatchers arrive for work as early as 3:30 am. Bus operators report soon afterwards. Buses are dispatched from four locations in Santa Rosa, Novato, San Rafael and San Francisco.

Dispatch's first priority is to insure a bus operator and a bus are available for each of the hundreds of bus trips scheduled each weekday according to the master scheduling plan established by the scheduling department.

As bus doors open and bus operators welcome customers



## **BUS & FERRY INFORMATION BY PHONE AND ONLINE**

Customer service representatives are available to answer questions about transit schedules and trip planning. Call 415-257-4510 or visit [www.goldengate.org](http://www.goldengate.org)

aboard, dispatch ensures that all buses move in the safest, quickest and most cost-effective way possible. Throughout the day, information about road conditions, traffic and weather is broadcast to operators via radio. If conditions require, road supervisors determine the best re-routes possible to maintain schedules.

GGT maintenance crews work 24 hours a day, seven days a week to ensure that each bus is ready for service.

## **BUS OPERATOR TRAINING**

Safety and training supervisors and Instructors provide training for all new hire bus operators. Students initially go through a rigorous ten-week training course before getting clearance to take to the road. During the first week, operators navigate through an extensive obstacle course for skills testing and pre-trip testing according to the California Department of Motor Vehicle standards as a minimum standard to prepare them.

Those who pass these tests spend the next seven weeks in the classroom on defensive driving, ADA requirements, emergency procedures and passenger relations, to name just a few, and that's just in the morning. In the afternoon, from behind the wheel, aspiring drivers familiarize themselves with all of the bus routes and associated bus stops while honing their driving skills under the watchful eye of an instructor. Finally, the bus operators go through two weeks of "line training" during which they operate their daily bus trips under close instruction of trained bus operators. All bus operators must also attend annual refresher training consisting of eight hours of classroom training.



**Automotive painter refurbishes coach.**



**Vehicle mechanic performs routine inspection.**

## **FULL SERVICE MAINTENANCE**

Since 1971, GGT has come a long way from its start in a rented warehouse with a muddy yard in San Rafael, CA. Today's state-of-the-art central maintenance facility and bus yard in San Rafael is equipped for every phase of maintenance. The facility houses 14 repair bays, three service bays, one upholstery bay, five body and fender bays, two paint bays, and one wash rack. Two smaller facilities in Novato and Santa Rosa house GGT maintenance shops with two service bays and one wash rack each.

The bus maintenance program assures safe, reliable and clean buses for passengers. Bus maintenance operates 24 hours a day, 365 days a year in order to keep the active fleet of 200 diesel buses in top shape.

Three shifts share the responsibility of executing the top notch maintenance and repair program which includes everything from engine overhauls to paint, body and upholstery work. The day shift performs heavy maintenance, rebuild and electrical work. The swing shift performs minor inspections, brake work and

repairs minor defects. The grave yard shift performs major inspections and ensures that enough coaches are ready for service each morning. The rigorous preventative maintenance program calls for various levels of inspection at 1,500; 3,000; 12,000; 24,000; and 96,000 miles. A computer system provides accurate, up-to-date mileage and data for every bus/component on a daily basis and triggers inspections.

## **REDUCING EMISSIONS**

In 2001, the California Air Resources Board (CARB) adopted new emission regulations for public transit operators in California. By September 2006, GGT met and exceeded CARB regulations by reducing Particulate Matter (PM) bus emissions by approximately 90 percent; the CARB regulation was to reduce emissions by 85 percent by 2007. By 2006, GGT was also able to reduce oxides of nitrogen (NOx) emissions by 25 percent.

These reductions were achieved through several key initiatives:

- Continuing the on-going bus replacement program which

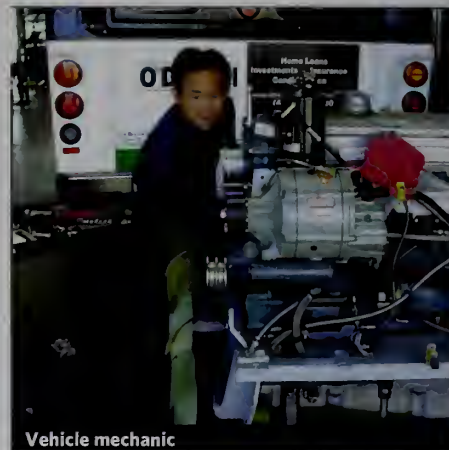




Golden Gate Transit bus in Petaluma, CA.



San Rafael Transit Center is a major transfer hub.



Vehicle mechanic

began in the early 1980s and retires older buses and replaces them with newer "clean air" buses.

- Using ultra-low sulfur diesel.
- Repowering 34 buses with new low-emission diesel engines.
- Retrofitting 46 buses (purchased from 1996 to 1999) with

filters to reduce PM by 85 percent and NOx by 25 percent.

- Testing new oil filtration devices aimed at extending the interval between oil changes, reducing the amount of engine oil used by half.

- Performing oil analysis to determine the "life-cycle" of all lubrication fluids on buses.

- Using synthetic oil in bus transmissions, coupled with oil analysis, to reduce oil use by 400 percent.

- Partnering with AC Transit in a joint demonstration project for the development of several "Zero Emission Buses" powered by hybrid electric hydrogen fuel cell technology.

## BIKES ON BUSES

In October 1993, GGT instituted its first bicycle-on-buses program on the Route 40/42 (connecting Marin County and Contra Costa County via the Richmond-San Rafael Bridge) by allowing bicycles inside the bus when the wheelchair area was not in use. In May 1995, the program was expanded to allow up to two bicycles in the interior of buses on select trips serving Routes 60, 70 and 80.

By July 1999, GGT launched its *Bike Racks on Buses* program with the installation of front-mounted, exterior bicycle racks accommodating two bikes on all 40-foot-long buses. At that time, because of their length, all buses that were 45-feet long



Bus operator

could not be equipped under law (California vehicle code 35400, section b.8).

In October 2006, GGT unveiled its new luggage bay bike rack program for all of its 45-foot-long buses. The new racks are located on a mount that slides out from the luggage bay for easy loading of up to two bicycles.

In 2009, new front-mounted, exterior racks that can accommodate three bikes will be added to those coaches that can safely accommodate them.

## WHALE BUS

The themed *Whale Bus* is a GGT tradition, carrying a vital environmental message on its side, as it travels its way throughout the GGT service area. The idea of a traveling environmental message was inspired by local renowned environmental artist George Sumner. In 1993, Sumner hand-painted, in oil, the first *Humphrey the Whale Bus* crafting the life size humpback whales on both sides of the 40-foot long bus, while dolphins frolicked on the front and rear. Until its retirement from the fleet in 2004, the bus traveled the commuter routes and visited local schools carrying the message "*Pollution Solution*" reminding everyone of the

environmental benefits of public transit to the health of our communities.

Sumner again volunteered his time and oils to create a new vision of this mobile community service, this time with a combination of humpback whales, bottlenose dolphins, sea lions and sea turtles. *Humphrey II* entered into service on Labor Day weekend 2005 carrying the message, "*To live on the land...we must learn from the sea.*" The *Whale Bus* not only carries a message while on the road, it is also made available to local schools as an educational backdrop to familiarize students with both the importance of the marine environment and public transit.

## SOLAR POWERED BUS SHELTERS

As a part of GGT contract for bus shelter advertising, construction and maintenance, 22 new shelters were installed at bus stops along U.S. Highway 101 in Marin and Sonoma counties. Three more solar shelters in the planning stages. These replacement shelters are equipped with photovoltaic "green" technology for illumination at night for additional passenger safety. The bus shelters are enclosed, offer limited seating, and are ADA compliant.



Whale Bus, Humphrey II



## 76 TRANSIT FARES

The District operates the Golden Gate Bridge, GGT and GGF with four funding sources: Bridge tolls, transit fares, government grants and advertising/concessions. Transit fare increases assist the District in meeting the operating expenses associated with providing public transit services. The District endeavors to set transit fares to cover 25 percent of the operating costs of GGT regional bus services and 40 percent of GGF operating costs.

Since 1998, to assist in keeping pace with inflation and cover a portion of operating costs, GGT and GGF fares have been increased annually.

### Cash Fares

The Golden Gate Transit (GGT) bus fare structure is currently based on six geographic fare zones. Fare zones provide a means of determining fares based upon distance traveled; the fare is assessed for travel from one's origin to destination.

As of July 1, 2008, one-way adult cash fares range from \$3.75 for travel between Sausalito (zone 2) and San Francisco (zone 1)

up to \$8.80 for travel between Santa Rosa (zone 6) and San Francisco (zone 1).

The GGF fare structure has a uniform adult cash fare established for both ferry routes (Larkspur to/from San Francisco and Sausalito to/from San Francisco) which, as of July 1, 2008, is \$7.45.

### Discount Fare Programs

- Youth (age 6 to 18), senior citizens (age 65+), and persons with disabilities receive a 50 percent discount off of the adult cash fare. Children 5 or younger ride for free when accompanied by an adult (limit 2 children per adult).

Adult cash fare discounts are also offered to frequent riders. Since 1982, frequent riders on both GGT and GGF receive a discount off of the adult cash fares when purchasing ticket books.

Effective January 1, 2009, the GGF system converted exclusively to accepting the TransLink® smartcard system as the sole fare media for customers wishing to receive frequent riders discount.





## TransLink

Under the leadership of MTC, Bay Area transit operators are migrating to a universal transit card fare payment technology dubbed TransLink. The TransLink smart card (about the size of a credit card) technology keeps the cash that a rider would normally use to pay transit fares or buy ticket books on one card, eliminating the need for transit passes, ticket books and transfers. The TransLink card automatically deducts the correct fare, including the appropriate discount and transfers, for each transit trip. TransLink allows public transit riders to use Bay Area public transit without worrying about the varying fare structures on different transit systems and without having to carry cash, ticket books or passes.

On September 17, 2007, GGT, GGF and AC Transit were the very first transit operators in the Bay Area to offer TransLink to their riders. In the near future, all Bay Area transit agencies will accept TransLink.



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## GOLDEN GATE TRANSIT RIDERSHIP

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Annual Ridership								
(not including Club Bus)	9,522,663	8,937,802	8,567,262	7,937,996	7,545,015	7,433,687	7,213,406	7,373,405
Average Weekday Ridership	32,475	30,370	28,851	26,863	25,499	25,085	24,109	24,553
Average Saturday Ridership	13,001	12,616	13,021	11,115	10,851	10,793	11,326	11,397
Average Sunday Ridership	10,465	9,968	9,795	8,645	8,294	8,730	8,703	9,072
Average Peak Period								
Transbay Ridership (am)	5,678	4,430	5,737	5,175	4,666	4,287	4,089	4,489
Average Peak Period								
Transbay Ridership (am & pm)	11,017	8,427	11,126	10,030	9,144	8,432	8,014	8,860
Number of Annual Bus Trips	329,379	329,675	314,851	289,681	287,252	279,551	294,420	301,482
Revenue Miles Traveled								
by GGT Coaches	7,753,281	7,891,256	7,402,789	5,912,824	5,120,850	5,079,192	5,110,335	5,284,328

## TRANSIT FUNDING

In 1969, the California State Legislature authorized the District to use Bridge tolls to assist in funding the operation of a public transit system as a means of managing traffic congestion across the Bridge and in the U.S. Highway/101 Corridor. The result has been a transit system that affords convenience and economy for passengers.

The operation of both GGT and GGF are funded using the following revenue sources: Golden Gate Bridge toll subsidies; passenger fares; government operating grants; other revenues

# HOW IS TRANSIT FUNDED?

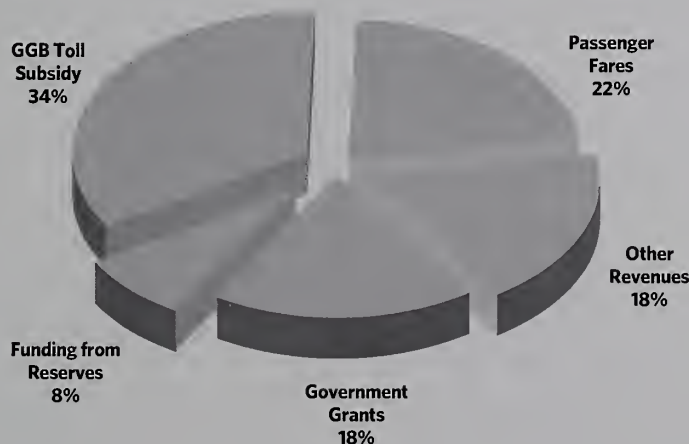
including a contract with Marin Transit for the operating of local bus service, advertising on buses, concessions at the Bridge and on ferry vessels, and property leases;

and, when required, operating costs are supported by District toll reserves.

Below is the estimated transit operating revenues for Fiscal Year 2008/2009. Transit operating expenses are estimated to equal the estimated operating revenues or \$102.4 million. This does not include the transit capital budget which is estimated at \$22.5 million.

### TRANSIT OPERATING REVENUES (IN MILLIONS)

	Bus Division	Ferry Division	Total	Percent of Cost
GGB Toll Subsidy	\$24.1	\$10.4	\$34.5	34%
Passenger Fares	12.1	10.7	22.8	22%
Other Revenues	17.7	0.3	18.0	18%
Government Grants	15.2	3.4	18.6	18%
Funding from Reserves	5.9	2.6	8.5	8%
Total	\$75.0	\$27.4	\$102.4	100%





## DISTRICT DIVISION

**T**he District is a unique public agency employer as reflected in its gender, ethnic and workplace diversity. The three operating divisions, Golden Gate Bridge, GGT and GGF, are supported by the District Division. The General Manager serves as the liaison overseeing the operations of all divisions and coordinates their activities pursuant to the policy direction of the Board of Directors.

The District employs over 800 regular employees in numerous different job classifications. These classifications are wide ranging and include engineers, painters, ironworkers, computer specialists, bus operators, administrative assistants, purchasers, customer service representatives, transit schedulers, accountants, mechanics, planners, laborers, toll collectors, vessel masters and deckhands, to name just a few.

The District division includes the departments under the direct management of the Officers of the Board of Directors

including the General Manager's office which include public affairs; the Auditor-Controller's office which includes accounting & payroll, budget & program analysis, capital & grants programs, procurement & retail operations; the District Engineer's office which includes technical design, steel and plant inspection, civil engineering, contracts & administration; and the District Secretary's office which includes public records, contracts, and board liaison. In addition, planning, human resources, environmental health and safety, marketing and communications, employee relations, information systems, customer relations and DBE programs report to the Deputy General Manager of the District Division.



**T**he Board of Directors (Board) of the District is comprised of 19 members, representing the six member counties, as follows:

- Nine members represent the City and County of San Francisco with one appointed by the Mayor, four are elected members of the Board of Supervisors, and four are non-elected public members appointed by the Board of Supervisors.
- Four members represent the County of Marin: two are elected members of the Board of Supervisors, one is an elected member of the Council of Mayors and Council members and is appointed by the Board of Supervisors, and one is either another member of the Marin County Board of Supervisors or a non-elected, public member appointed by the Board of Supervisors.
- Three members represent the County of Sonoma: one is an elected member of the Board of Supervisors, one is an elected member of the Council of Mayors and Councilmembers and is appointed by the Board of Supervisors, and one is a non-elected, public member appointed by the Board of Supervisors.
- One member represents the County of Napa, one member represents the County of Mendocino and one member represents the County of Del Norte. Each is a non-elected, public member appointed by their respective Board of Supervisors.

Board members are paid \$50 per meeting day, up to a maximum of \$5,000 in a year, with the exception of the Board President who, as an ex-officio member of all committees, may be paid a maximum of \$7,500 in one year. The full Board meets twice per month. In addition, the Board has five standing committees: Finance-Auditing; Building & Operating; Transportation; Rules, Policy & Industrial Relations; and Governmental Affairs and Public Information.

The original Board was comprised of 14 members with seven from City and County of San Francisco and seven from the counties to the north. In 1968, the Board was comprised of 13 members, seven representing the City and County of San Francisco

## BOARD OF DIRECTORS

and six representing the counties to the north. In 1969, the Board composition was reconstituted increasing the membership

from 13 to 18, with nine representing the City and County of San Francisco San Francisco and nine representing the northern counties. It was reconstituted again in 1976, when the membership increased to 19, with nine members still representing the City and County of San Francisco, and ten members now representing the northern counties.



# NORTHWESTERN PACIFIC RAILROAD

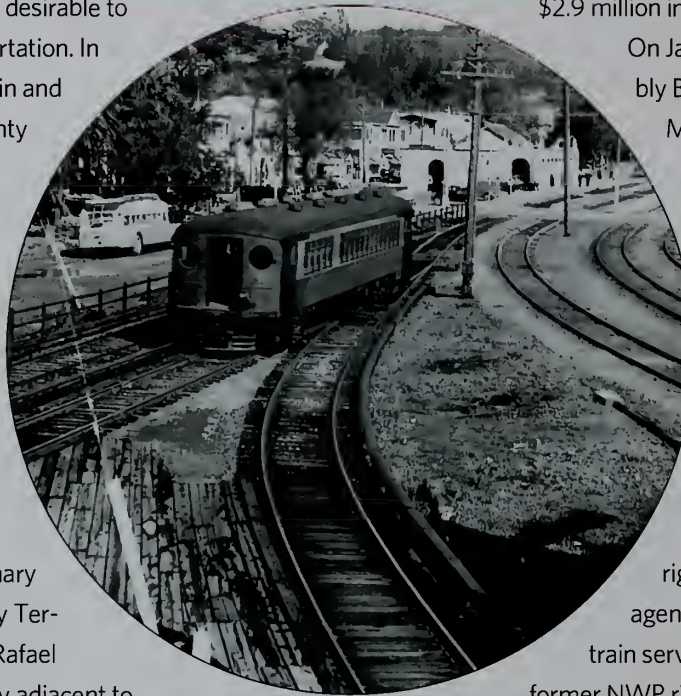
In the 1960s, studies of the long range transportation needs in the Golden Gate Corridor identified sections of the Northwestern Pacific Railroad (NWP) right-of-way in Marin County desirable to preserve for future public transportation. In 1982, the District, along with Marin and Sonoma counties and Marin County Transit District began coordination, through a regional NWP Task Force, to purchase portions of the NWP right-of-way.

As part of three separate purchases in 1983, 1984 and 1990, 13 miles of right-of-way in Marin County were purchased between Paradise Drive in Corte Madera and Route 37 in Novato. Two of the District's primary transit facilities, the Larkspur Ferry Terminal and the C. Paul Bettini San Rafael Transit Center, are located directly adjacent to this segment and will ultimately be linked to the now-planned passenger train service.

On November 7, 1995, the District, Marin County, and the North Coast Railroad Authority formed the Northwestern Pacific Railroad Authority (NWPRA) as the entity to take title of the right-of-way. In April 1996, the NWPRA Board of Directors adopted the final resolutions to complete purchase of the right-of-way from Southern Pacific Transportation Company. The terms of the purchase agreement were signed on April 11, 1996, and the transaction was completed on April 29, 1996. The acquisition extends 115 miles from Route 37 in Novato (Marin County)

north to Willits (Mendocino County) and 24 miles from Novato to Lombard (Napa County). The purchase was funded with federal grants totaling \$25.7 million and \$2.9 million in state funds.

On January 1, 2003, California Assembly Bill 2224 created the Sonoma-Marin Area Rail Transit District (SMART), to be the owner of the right-of-way and to plan and provide passenger train service to Sonoma and Marin County residents. In March 2004, the NWP right-of-way, then owned by the NWPRA, was transferred to SMART and the NWPRA was dissolved having met its mission to preserve the right-of-way for transfer to an agency that would provide passenger train service. In March 2006, the 14 miles of former NWP right-of-way located in Marin County and owned by the District, as well as the 1.4 miles of right-of-way jointly owned by the District, County of Marin, and Marin County Transit District were also transferred to SMART.



To learn more about SMART: [www.sonomamarintrain.org](http://www.sonomamarintrain.org). Key activities related to the SMART project's implementation of passenger train service include the following milestones:

- Certification of the Final Environmental Impact Report 2006 and certification of the supplemental EIR 2008.
- SMART Sales Tax Measure approved by 69.6 percent of voters 2008.
- Project Implementation/Construction 2009-2014.

Above: NWP right-of-way in San Rafael, 1938.



Over the years, citizen advisory committees have played an important role in forming District policies and services. In 1970, less than a year after Golden Gate Transit was formed, the District Board created the first Citizen's Advisory Panel. The Panel provided review and advice to the District during the preparation of its Long-Range Transportation Facilities Plan and was active through 1975.

The District works closely with three on-going customer committees: Advisory Committee on Accessibility (ACA), Bus Passengers Advisory Committee (BPAC), and Ferry Passengers Advisory Committee (FPAC). The ACA began in 1979 and continues to advise on issues pertaining to seniors and persons with disabilities. In 1989, BPAC was formed to help the District maintain effective bus transit services. The committee is comprised of a wide range of bus passengers from throughout the service area.

## ADVISORY COMMITTEES

The FPAC was formed in 1980 to advise the District on Golden Gate Ferry service matters. The committee suggests ways to maintain and enhance the convenience

and efficiency of ferry service.

In 1977, the District formed a Bicycle Advisory Committee to assist in improving the safety of bicycle operations on the Golden Gate Bridge. The committee was active through 1980.

From time to time the District has established an Architectural Advisory Committee (AAC) to provide advice on architectural decisions related to specific projects such as the Toll Plaza Modernization in the 1980s and the design of the Bridge Public Safety Railing in the late 1990s. In 1992, a Seismic Instrumentation Advisory Panel was established to provide guidance for the development and installation of a seismic instrumentation system for the Golden Gate Bridge.



# THE GREATEST SPAN EVER BUILT BY MAN!



JOSEPH B. STILWELL  
1870 - 1936  
SCIENTIST - DREAMER - ELDER  
"He bridged the Gaps in the ADAM State"



*Triumphant, Pride of the  
World Does Thee Homage.*





**June 28, 1921** Joseph B. Strauss submitted preliminary sketches for a symmetrical cantilever-suspension hybrid span with an estimated cost of \$17 million.

**January 13, 1923** Historic meeting called by Franklin P. Doyle, local Sonoma County banker and president of the Santa Rosa Chamber of Commerce resulted in the formation of the Bridging the Golden Gate Association.

**May 25, 1923** Coombs Bill passed by State Legislature, signed into law as "The Bridge and Highway District Act" giving counties the right to organize and form a special district to assume planning, designing, and financing the construction of a bridge.

**December 20, 1924** Secretary of War John W. Weeks issued a provisional construction permit for a bridge.

**December 4, 1928** Golden Gate Bridge and Highway District (District) incorporated as the special district to design, construct, and finance a bridge across the Golden Gate Strait.

**January 23, 1929** First Board of Directors meeting held.

**August 11, 1930** War Department issued final permit for the construction of a suspension span, with a 4,200-foot main span and a vertical clearance of 220 feet at mid-span.

**August 27, 1930** Joseph B. Strauss submitted final plans for the Golden Gate Bridge (now a suspension span design) to the Board of Directors.

**November 4, 1930** Voters in the District's six member counties approved a \$35 million bond issue to finance construction of the Bridge. The vote is 145,057 YES and 46,954 NO.

**January 5, 1933** Construction of the Golden Gate Bridge began.

**February 26, 1933** Official groundbreaking ceremony celebrated the start of Bridge construction.

**May 27, 1937** Golden Gate Bridge opened to pedestrians for the

Pedestrian Day celebration.

**May 28, 1937** Golden Gate Bridge opened to vehicular traffic at twelve o'clock noon.

**March 22, 1957** A 5.3 earthquake center in Daly City hit the San Francisco Bay Area resulting in no deaths but lots of damage.

According to the San Francisco Chronicle, at about 11:45 a.m. on March 22, a "twisting, jarring side-rolling motion" caused skyscrapers in downtown San Francisco to sway visibly. People ran into the streets, some "sobbing hysterically," and the Golden Gate Bridge "undulated as in a fierce gale."

**November 10, 1969** California Assembly Bill 584 authorized the District to develop a transportation facility plan for implementing a mass transportation program in the U.S. Highway 101/Golden Gate Corridor. The District was renamed as the Golden Gate

Bridge, Highway and Transportation District.

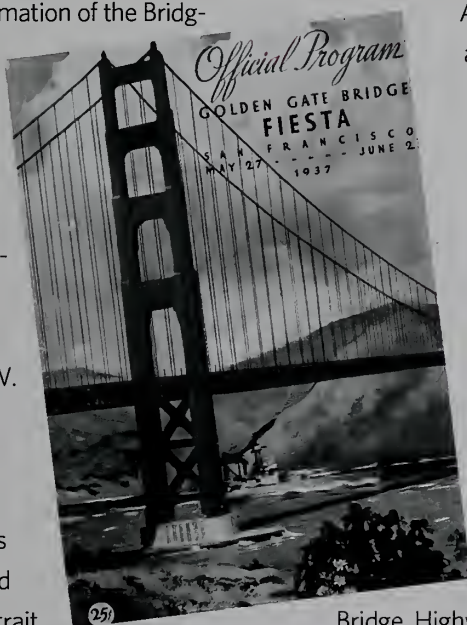
**August 15, 1970** Golden Gate Ferry (GGF) began service between Sausalito and San Francisco.

**July 1, 1971** Remaining original bonds issued for the construction of the Golden Gate Bridge were retired. The \$35 million in principal and nearly \$39 million in interest were financed entirely from Bridge tolls.

**January 1, 1972** Golden Gate Transit (GGT) basic bus service began.

**January 3, 1972** GGT regional transbay commute bus service began.

**February 26, 1976** The Golden Gate Bridge appeared on the cover of Rolling Stone Magazine as the backdrop for five prominent San Francisco rock and rollers of the day, with a title that reads, "What a Long Strange Trip It's Been."





**December 13, 1976** GGF's *G.T. Marin* Spaulding vessel placed into service between Larkspur and San Francisco.

**December 13, 1976** GGF Larkspur Ferry Terminal dedicated.

**March 7, 1977** GGF's second Spaulding vessel, *G.T. Sonoma*, was added to Larkspur service.

**September 12, 1977** GGF's third Spaulding vessel, *G.T. San Francisco*, arrived in Larkspur. At this time, just two of the three Spaulding vessels were used in daily service, with the third serving as a standby alternate.

**June 17, 1978** GGF San Francisco Ferry Terminal dedicated.

**1979** Advisory Committee on Accessibility formed to provide input on issues pertaining to seniors and persons with disabilities.

**1980** Ferry Passenger Advisory Committee formed.

**1982** Discount fare program established for frequent users of GGT and GGF.

**December 1983** First of the three *G.T. Spaulding* vessels sent to San Diego for conversion to diesel power from their original gas turbine propulsion.



**February 22, 1985** One billionth car crossed the Golden Gate Bridge.

**August 15, 1985** Construction completed on the Golden Gate Bridge Deck Replacement Project.

**November 17, 1985** All three Spaulding vessels, now converted to diesel, rechristened with the designation M.S. (Motor Ship) and for the first time, all three vessels were placed into service on the Larkspur and San Francisco route.

**May 24, 1987** Golden Gate Bridge celebrated its 50th Anniversary.

**1989** GGT Bus Passengers Advisory Committee formed to assist with discussions of bus transit service issues.

**January 3, 1992** GGT celebrated 20th Anniversary of regional transbay bus service with the grand opening of the C. Paul Bettini San Rafael Transit Center.

**March 7, 1993** GGT started Route 40 service across the Richmond-San Rafael Bridge.

**1997** GGT added the first high-capacity 57-passenger buses to the fleet.

**January 1, 1997** 25th Anniversary of GGT bus service.

**May 1, 1997** 15 NASCAR Winston Cup race cars crossed the Golden Gate Bridge as part of public safety awareness campaign, "I Can Drive 45 on the Golden Gate Bridge."

**May 24, 1997** Golden Gate Bridge Day at 3COM Park (formerly Candlestick Park) in honor of the 60th Anniversary.

**May 27, 1997** 60th Anniversary of the Golden Gate Bridge.

**August 5, 1997** Groundbreaking ceremony marked start of Golden Gate Bridge Seismic Retrofit Design and Construction Project.

**August 28, 1998** Two welcoming ceremonies introduced *Motor Vessel (M.V.) Del Norte* to the Bay Area, with Larkspur Mayor Ron Arlas at the GGF Larkspur Terminal and San Francisco Mayor Willie Brown at the GGF San Francisco Ferry Terminal.

**September 3, 1998** U.S. Postal Service unveiled a Golden Gate Bridge Commemorative Stamp.

**September 8, 1998** GGF Larkspur service expanded with the launch of new high-speed catamaran, *M.V. Del Norte* offering more trips, better departure times and just 30-minute crossings.

**October 9, 1998** District awarded contract for new toll registry system with manual and electronic toll collection capabilities for the Golden Gate Bridge.

**July 29, 1999** GGT completed installation of exterior bicycle racks on all 40-foot-long buses.

**March 31, 2000** GGF added direct service from Larkspur to San Francisco Giants baseball games at the new downtown ballpark.

**July 13, 2000** FasTrak electronic toll collection launched on Golden Gate Bridge.

**August 15, 2000** GGF's Sausalito service celebrated 30th Anniversary.

**September 11, 2000** First dedicated toll lane for FasTrak users opened in Golden Gate Bridge toll plaza.

**October 24, 2000** First of three shipments of the biggest cranes in the world bound for the Port of Oakland pass under the Golden Gate Bridge. The second shipment passed under on May 1, 2002, and the final shipment came under on March 5, 2005.

**May 11, 2001** Construction contract awarded for Golden Gate Bridge Seismic Retrofit Design and Construction, Phase 2, the retrofit of the San Francisco viaduct and Fort Point arch.

**July 20, 2001** GGF's high-speed catamaran, Motor Vessel (M.V.) *Mendocino*, christened at Noyo Harbor, near Fort Bragg, CA. Built by Nichols Bros., Freeland, WA, it is named in honor of Mendocino County as it is one of six counties that comprise the District.

**July 22, 2001** The new *M.V. Mendocino* ferry vessel arrived at the GGF Larkspur Ferry Terminal.

**August 10, 2001** Contract awarded for construction of Public Safety Railing between the Golden Gate Bridge sidewalks and

roadway. Fabrication took place off-site in 2002. Installation began in January 2003 and was completed in December 2003.

**August 24, 2001** New *M.V. Mendocino* vessel christened, for a second time, at the GGF San Francisco Terminal.

**August 24, 2001** San Francisco Ferry Terminal rededicated as the Stephan C. Leonoudakis Ferry Terminal in honor of retired District Board member Stephan C. Leonoudakis. Leonoudakis was recognized for his efforts as a key leader in the development of ferry service between Marin and San Francisco in the early 1970s.

**September 10, 2001** New *M.V. Mendocino* vessel entered into service between Larkspur and San Francisco.

**September 11, 2001** Golden Gate Bridge sidewalks closed to the public in light of the terrorist events in New York City, Shanksville, PA, and Washington, DC. They remained closed until November 16, 2001.

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**October 8, 2001** Construction began at the GGF Larkspur Terminal parking lot to add 200 parking spaces.

**May 27, 2002** Golden Gate Bridge celebrated its 65th Anniversary without fanfare.

**December 7, 2002** *M.V. Mendocino* vessel taken out of service for warranty work by the original builder after it was determined that the aluminum used for the hull was constructed using a process that did not meet stringent marine engineering and USCG regulations.

**July 2, 2003** The first annual Golden Gate Bridge collectible holiday ornament debuted at the 2003 Marin County Fair.

**July 23, 2003** Round eight-foot diameter clock, installed in 1949, located on top of the toll plaza roof was removed and a new, more modern replica of the clock was installed in August 2003.

**November 3, 2003** GGT bus system restructured due to financial constraints resulting in a 20 percent reduction in service.

**December 11, 2003** Golden Gate Bridge Public Safety Railing

installation completed. District, joined by San Francisco Bicycle Coalition and Marin County Bicycle Coalition, launched a new public safety awareness campaign: *Ride Safe on the Golden Gate*.

**December 15, 2003** GGF's *M.V. Mendocino* returned to service after extensive warranty work.

**March 26, 2004** GGF's *M.V. Golden Gate* retired from GGF fleet. It began service on August 15, 1970 and made roughly 432,108 round trips, traveled about 1,296,384 nautical miles and carried 21.1 million passengers.

**April 30, 2004** California National Guard troops departed the Golden Gate Bridge having been deployed since November 2001.

**May 18, 2004** At approximately 8:50 am, a young deer made its way safely across the Golden Gate Bridge heading southbound from the Marin Headlands. Commute traffic comes to a halt while the deer is escorted by Bridge Patrol units.

**June 7, 2005** New Bay Area Regional FasTrak customer service center opened in San Francisco, combining the Golden Gate Bridge and Caltrans centers into one location.

**August 29, 2005** Female ostrich got loose on the Bridge roadway around 4:45 pm from the back of a northbound van heading for a Healdsburg farm. She was retrieved safely.

**March 23, 2007** District Board of Directors, in accordance with California Senate Bill 988, designated the Golden Gate Bridge as a Safety Awareness Zone and approved a Safety Awareness Zone Plan.

**October 27, 2006** Contract awarded for complete refurbishment of GGF's Spaulding vessel the *M.S. Marin*.

**February 4, 2006** *Queen Mary 2* made maritime history when she made her maiden call to San Francisco. The massive ship passed under the Golden Gate Bridge while thousands of maritime enthusiasts and well-wishers were on hand to welcome her.

**February 24, 2006** Contract awarded for the Golden Gate





Bridge North Approach Physical Security Improvements Project. Construction began in May 2006 and was completed at the end of 2006.

**July 14, 2006** Contract was awarded for replacement of the Fas-Trak toll lane and toll plaza equipment.

**August 2006** Construction began on a realignment of Merchant Road, on the south west side of the Golden Gate Bridge, to create an improved connection to The Presidio and more safely accommodate vehicles, pedestrians and cyclists. This work was completed in spring 2007.

**May 28, 2007** Golden Gate Bridge celebrated its 70th Anniversary with the release of a new book, *Golden Gate Bridge, Report of the Chief Engineer, Volume II*, by F. Stahl, D. Mohn, and M. Currie.

**July 9, 2007** Newly refurbished *M.S. Marin* returned to service between Larkspur and San Francisco and, on July 29, it was moved to the Sausalito route.

**September 17, 2007** TransLink®, the Bay Area's smartcard fare payment system, made available to all GGT and GGF customers.

**August 10, 2008** A distressed pelican was rescued from the southbound curb lane of the Golden Gate Bridge at approximately 2:44 p.m. and transferred to animal care. The pelican recovered and was released near the Golden Gate Bridge on September 12, 2008.

**June 27, 2008** Contract awarded for the GGF Larkspur Terminal Parking and Access Improvements Project to add 217 parking spaces to the lot and improve access for bicycles and pedestrians. This work was completed in early 2009.



## AWARDS, HONORS & RECOGNITIONS

**1955** American Society of Civil Engineers (ASCE) named the Golden Gate Bridge as one of the Seven Engineering Wonders of the World.

**1973** District recognized for Meritorious Contributions to the Bay Area Environment by the San Francisco Bay Area Council.

**1973** Golden Gate Transit (GGT) received the Fleet Owner Magazine's Maintenance Efficiency Award annually from 1973 through 1986.

**1974** GGT received the Fleet Owner Magazine's Vehicle Design Award.

**1976** California Highway Patrol and Golden Gate Bridge Highway and Transportation District (District) awarded a Certificate of Appreciation from San Francisco Suicide Prevention, Inc. for contributing to life-saving efforts through outstanding public service.

**1977** District awarded U.S. Department of Transportation (DOT) Administrator's Award for Outstanding Public Service for displaying extraordinary initiative in advancing urban transportation in the public interest.

**1980** Golden Gate Ferry (GGF) Larkspur Ferry Terminal received Award of Honor for Design Excellence from the Northern California Chapter of American Institute of Architects.

**1980** District received DOT Reducer-1 Award for contributing to energy conservation through its ridesharing program.

**1980** District received Presidential Energy Efficiency Award for operating transit services and actively promoting ridesharing. The District was the only public transit agency so honored.

**1980** Following the nomination by the United States Department of the Interior, National Park Service, the Golden Gate Bridge was determined eligible for individual listing in the National Register of Historic Places under National Register Criteria A, B, and C.

**1981** District received American Public Transit Association's

(APTA) First Place AdWheel Competition Award for excellence in advertising.

**1982** GGF Larkspur Ferry Terminal received Honor Award from the California Council of American Institute of Architects for design excellence.

**1982** District received a Special Letter of Recognition from the Metropolitan Transportation Commission (MTC) for restoring transportation service disrupted by the severe rainstorms and flooding in Marin and Sonoma counties in January 1982.

**1984** ASCE named the Golden Gate Bridge a National Civil Engineering Landmark.

**1984** District received Institute of Transportation Engineers Transportation Achievement Award recognizing innovations in providing for the transportation needs of the North Bay.

**1986** National Council of the ACSE and State Council of ASCE awarded the Outstanding Civil Engineering Achievement Award to GGBHTD and Ammann & Whitney for the Golden Gate Bridge Deck Replacement.

**1986** District and Ammann & Whitney received Prize Bridge Award from the American Institute of Steel Construction Prize Bridge Competition, recognizing outstanding design using structural steel for the Deck Replacement Program.

**1986** District and Ammann & Whitney received the James F. Lincoln Arc Welding Foundation Gold Award for the advancement of arc welded design, engineering and fabrication. This award is in recognition of the advances in welding technology that were developed and implemented during the Bridge Deck Replacement.

**1987** GGT received Fleet Owner Magazine's Maintenance Management Achievement Award.

**1987** District recognized by the California State Assembly recognized the Minority Affairs Committee of the Regional Transit Agencies for outstanding contributions to the continued



growth and success of all minority and woman-owned businesses.

**1987** District received MTC's Grand Award for design and implementation of North Bay ridesharing programs.

**1987** Golden Gate Bridge new decorative tower lighting received two awards from the Illumination Engineering Society of North America: International Illumination Design Award and Edwin F. Guth Memorial Lighting Design Award of Merit.

**1989** Golden Gate Bridge received Annual Award for Architectural Excellence from Foundation for San Francisco Architectural Heritage for toll booth renovation.

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**1990** District received MTC Merit Award for earthquake response efforts after the 1989 Loma Prieta earthquake.

**1990** Golden Gate Bridge designated by the State Office of National Preservation as California Historical Landmark No. 974.

**1990** GGT received Marin Waste Reduction Award from the Marin Solid Waste Management and Resource Recovery Association for exemplary efforts to reduce solid waste requiring landfill disposal.

**1991** District received 22nd Annual Engineering Excellence Award from Consulting Engineers Association of California for the Golden Gate Bridge Transit Feasibility Study.

**1992** C. Paul Bettini San Rafael Transit Center received the Ted Van Midde Memorial Master Award presented by the Northern California Concrete Association, Inc.

**1993** GGT's "Whale Bus" and "Pollution Solution" marketing campaign received MTC's Merit Award for contributing to



transportation improvement.

**1993** GGT named to APTA's Silver Honor Roll for educating the public about the benefits of public transportation with its "Whale Bus" education program.

**1993** Golden Gate Bridge received Society of American Registered Architects Distinguished Building Award in recognition of enduring excellence in design. The Bridge was the first structure other than a building to receive the distinction since the Society began presenting the awards in 1956.

**1994** Golden Gate Bridge named one of Seven Wonders of the Modern World by the ASCE along with the Hoover Dam, Interstate Highway System, Kennedy Space Center, Panama Canal, Trans-Alaska Pipeline and World Trade Center.

**1994** GGT received Tranny Award for excellence in transportation for the "Whale Bus" educational program from the California Transit Foundation.

**1994** GGT received Clean Air Award in the education category for its 1993 Pollution Solution marketing and educational campaign from the American Lung Association of San Francisco.

**1995** GGT named to APTA's Silver Honor Roll for educating the public about the benefits of public transportation.

**1995** Popular Mechanics Magazine and ASCE together named the Golden Gate Bridge as one of the Seven Wonders of the Modern World.

**1996** District Board member Stephan C. Leonoudakis received APTA's Local Distinguished Service Award.

**1997** GGT received APTA's Certificate of Improvement in recognition of its improved safety record.



- 1997** Golden Gate Bridge honored with San Francisco Convention and Visitor's Bureau Silver Cable Car Award in recognition of the 60th Anniversary of the Bridge.
- 1997** District took First Place in APTA's AdWheel Awards Competition for Advertising, Advocacy, Awareness.
- 1998** District received first place award in APTA's AdWheel competition in the newsletter category.
- 1998** Retired District General Manager Carney J. Campion received MTC Distinguished Service Award.
- 1999** Golden Gate Bridge ranked #2 in Top 10 Construction Achievements of the 20th Century named by CONEXPO-CON/AGG, the largest construction, aggregates, and ready mixed concrete industries trade show in the Western Hemisphere.
- 1999** Golden Gate Bridge designated as San Francisco Landmark No. 222 by the City and County of San Francisco Board of Supervisor's Ordinance 125-99.
- 1999** District received Federal Transit Administrator's Outstanding Minority Business Enterprise Advocacy Award.
- 2000** GGT received U.S. Environmental Protection Agency Region 9's Earth Day Environmental Award for participation in Pollution Prevention in Auto Repair and Fleet Maintenance.
- 2000** Golden Gate Bridge earned Second Annual Gustav Lindenthal Medal as the most significant engineering project of the 20th Century.
- 2000** American Public Works Association selected the Golden Gate Bridge as one of the ten Most Outstanding Public Works Projects of the 20th Century.
- 2000** GGF received MTC Award of Merit for its part in the successful Pacific Bell Park Transit Campaign.
- 2000** District took 1st place in APTA's 1999 AdWheel Awards Competition for its Bus Operator Recruitment Campaign.
- 2001** ASCE named the Golden Gate Bridge a Civil Engineering Monument of the Millennium, along with Panama Canal, Kansai International Airport, Empire State Building, Hoover Dam, Interstate Highway System, California Water Project, Euro-tunnel Rail System, and Chicago Wastewater System.
- 2005** Golden Gate Bridge Seismic Retrofit Design and Construction Project, Phase 2, recognized as Special Earthquake Engineering Project of the Year by the San Francisco Section of the ASCE.
- 2006** Golden Gate Bridge Seismic Retrofit Design and Construction Project named as one of the top nine Seismic Retrofit Projects of the 20th Century by Applied Technology Council and Engineering News Record as part of their "Celebrating 100 Years of Seismic Structural Engineering and Construction."
- 2007** Golden Gate Bridge ranked fifth among the top 150 favorite structures in the U.S. by the American Institute of Architects. The Empire State Building was ranked first, White House second, Washington National Cathedral third, and Jefferson Memorial fourth.
- 2007** Golden Gate Bridge Seismic Retrofit Design and Construction Project, Phase 2, received the 2007 Outstanding Civil Engineering Achievement (OPAL) Award by the ASCE.
- 2008** Construction Innovation Forum presented the Golden Gate Bridge Seismic Retrofit Design and Construction Project, Phase II with Nova Award for innovations in bridge retrofit techniques.
- 2008** Contract awarded for Golden Gate Bridge Seismic Retrofit Design and Construction Project, Phase 3A.
- 2008** GGT earns MTC Merit Award for operation of seasonal Muir Woods Shuttle in partnership with National Park Service and Marin County.
- 2008** Editors Award from the *Journal of Protective Coatings and Linings* for the technical paper "The Golden Gate Bridge: A History of Maintenance Practice" published in the January 2008 edition.
- 2009** Golden Gate Sausalito Ferry named second most scenic ferry ride in the world by Society of American Travel Writers.



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Online Archive of California: [www.oac.cdlib.org](http://www.oac.cdlib.org)

American Experience, Golden Gate Bridge:  
[www.pbs.org/wgbh/amex/goldengate](http://www.pbs.org/wgbh/amex/goldengate)



# CREDITS

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